

SECTION 4

ELECTRICAL ADJUSTMENT

CONTENTS

Recommended Test and Measuring Equipment.....	4-1
Setup of EVR Tool.....	4-2
Function (Ver. 3.2).....	4-2
E. V. R. Direct Functions.....	4-3
Start Adjustment	4-3
<Camera Section>	
1. Head Optical Ass'y 1.....	4-4
1-1. Reset Pulse Adjustment.....	4-4
1-2. Clamp Pulse Adjustment.....	4-4
1-3. Sample Pulse Adjustment.....	4-5
1-4. Reset DC Adjustment	4-5
1-5. Carrier Leak Adjustment	4-6
1-6. CDS OUT DC Adjustment.....	4-6
1-7. SUB Voltage Adjustment 1.....	4-7
1-8. SUB Voltage Adjustment 2.....	4-8
2. Video Main and DSP.....	4-8
2-1. Initial Setting.....	4-8
2-2. D3.0V Adjustment	4-8
2-3. Ref DC for A/D Adjustment	4-8
3. Encoder.....	4-9
3-1. Y & SYNC Levels Adjustment 1.....	4-9
3-2. Pr Level Adjustment.....	4-9
3-3. Pb Level Adjustment	4-10
3-4. CAM DC Adjustment.....	4-10
3-5. Carrier Balance Adjustment.....	4-11
3-6. Y & SYNC Levels Adjustment 2.....	4-11
3-7. Burst Level & Vector Adjustment	4-12
3-8. Video OUT & Sync Adjustment.....	4-12
3-9. Return Video Level Adjustment	4-13
3-10. Mon Enc Level Adjustment	4-13
4. Sync	4-14
4-1. Connection	4-14
4-2. 4fsc VCO Adjustment.....	4-14
4-3. SCH Phase Adjustment	4-14
4-4. System Phase Adjustment 1.....	4-15
4-5. System Phase Adjustment 2.....	4-15
4-6. REF SCH Adjustment (for PAL only)	4-16
4-7. REF SCH Adjustment (for NTSC only)	4-16
4-8. Test Signal Level Adjustment.....	4-16

5. Head Optical Ass'y 2.....	4-17
5-1. AWB Preset Level Adjustment.....	4-17
5-2. RGB Pedestal Adjustment	4-17
5-3. 0% ABB Adjustment.....	4-17
5-4. RGB Test Signal Level Adjustment.....	4-18
5-5. RGB A/D Input Level Adjustment 1	4-18
5-6. RGB A/D Input Level Adjustment 2	4-19
5-7. Shading Balance Adjustment.....	4-19
5-8. RGB Pedestal Tracking Adjustment	4-20
5-9. RGB Sample & Hold Level Adjustment 1	4-20
5-10. Vertical Pattern Noise Confirmation & Adjustment	4-21
5-11. CDS DC Adjustment	4-21
5-12. High-Light Carrier Level Adjustment.....	4-21
5-13. Analog White Shading Adjustment	4-22
5-14. Digital White Shading Adjustment	4-22
5-15. Auto Dark Shading Adjustment.....	4-23
5-16. Digital Dark Shading Adjustment	4-23
5-17. Flare Correction Adjustment	4-23
5-18. R gamma & B gamma Adjustment	4-24
5-20. Modulation Adjustment	4-25
5-21. Modulation Confirmation	4-25
<VTR Section>	
6. Video Main & Video I/F	4-26
6-1. Audio VCO Adjustment	4-26
6-2. DA C Level Adjustment (for NTSC only).....	4-26
6-3. Sync Level Adjustment (for NTSC only)	4-27
6-4. Y Level Adjustment (for NTSC only)	4-27
6-5. Burst Level Adjustment (for NTSC only)	4-28
6-6. Y Frequency Adjustment (for NTSC only)	4-28
6-7. Y/C Timing Adjustment (for NTSC only)	4-29
6-8. Video AD Input Level Adjustment (for NTSC only)	4-29
6-9. APC Adjustment (for NTSC only).....	4-30
6-10. Out Bias Adjustment (for NTSC only)	4-30
6-11. Hue Adjustment (for NTSC only).....	4-31
6-12. PLL POS Adjustment.....	4-31
6-13. ENC & Sync Level Adjustment (for PAL only)	4-32
6-14. Carrier Balance Adjustment (for PAL only)	4-32
6-15. Burst Phase Adjustment (for PAL only).....	4-33
6-16. QUAD Adjustment (for PAL only).....	4-33
6-17. Burst Level Adjustment (for PAL only)	4-33
6-18. Croma Level Adjustment (for PAL only).....	4-33
6-19. Y/C Timing Adjustment (for PAL only)	4-34
6-20. Pb Timing Adjustment.....	4-34
6-21. Pr Timing Adjustment.....	4-35
6-22. Y Clamp DC Adjustment	4-35
6-23. Y Level Adjustment	4-36
6-24. DEC Y Level Adjustment (for NTSC only)	4-36
6-25. Camera Input Vector Adjustment.....	4-37
6-26. Video Input Vector Adjustment (for NTSC only)	4-37

7. Servo.....	4-38
7-1. Reel Torque Offset Adjustment.....	4-38
7-2. Tension Offset Current Adjustment.....	4-38
8. RF	4-39
8-1. System Hook Up Setting.....	4-39
8-2. PLL VCO Adjustment.....	4-39
8-3. R/P Envelope Level Confirmation.....	4-40
8-4. PB Envelope Level Adjustment	4-40
8-5. HSE Input Confirmation	4-40
8-6. PB Equalizer Adjustment (Auto)	4-40
8-7. Rec. Curr. & Freq. Adjustment (Auto).....	4-42
8-8. Confidence PB Envelope Level Adjustment	4-42
8-9. Final Confirmation.....	4-43
8-10. Auto Adjustment System Normalization (Calibration) Procedures	4-43
[Manual Adjustment]	
Initial Setting (Manual)	4-44
PB Equalizer Adjustment 1 (Manual)	4-45
PB Equalizer Adjustment 2 (Manual)	4-45
Rec. Curr. & Freq. (L ch) Adjustment (Manual)	4-46
Rec. Curr. & Freq. (R ch) Adjustment (Manual).....	4-46
9. Audio LCD.....	4-48
9-1. Initial Setting.....	4-48
9-2. Playback Level Adjustment.....	4-48
9-3. Recording Level Adjustment.....	4-49
9-4. Meter Adjustment.....	4-49
9-5. Test SG Adjustment	4-50
9-6. CUE Recording Level Adjustment	4-50
9-7. CUE Recording Current Adjustment.....	4-51
9-8. Final Setting	4-51
10. EVF	4-52
Preparation.....	4-52
10-1. H Free Run Adjustment	4-52
10-2. V Free Run Adjustment.....	4-52
10-3. Sub Bright Adjustment	4-52
10-4. Rotation Adjustment.....	4-53
10-5. Centering Adjustment	4-54
10-6. Size Adjustment	4-55
10-7. V Linearity Adjustment.....	4-56
10-8. Balance Adjustment.....	4-56
10-9. Bright Adjustment.....	4-56
10-10. Focus Adjustment	4-56

SECTION 4

ELECTRICAL ADJUSTMENT

CONTENTS

11. Power

11-1. D3.0V Adjustment	4-1
11-2. D5.0V Adjustment	4-1
11-3. A5.6V Adjustment.....	4-1
11-4. A9.0V Adjustment.....	4-1
11-5. A -5.6V Adjustment.....	4-1
11-6. A3.6V Adjustment.....	4-1
11-7. CCD 17.0V Confirmation.....	4-2
11-8. CCD -11.0V Confirmation	4-2
11-9. A-3.9V Confirmation	4-2

Electrical Adjustment Procedures

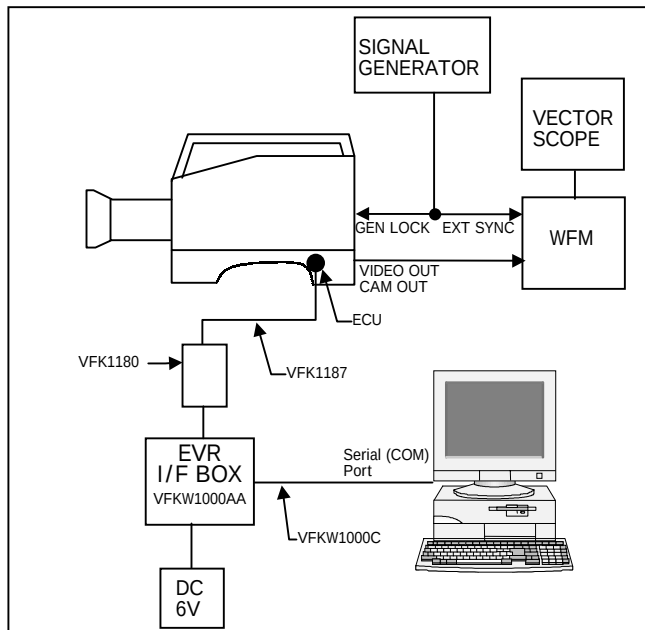
Recommended Test and Measuring Equipment

The following test and measuring equipment are required to conduct the electrical adjustments.

Model No. or Equivalent	Equipment	Remark
2467B TEKTRONIX	Dual Trace Oscilloscope	More than 100MHz
1780R TEKTRONIX	Wave Form Monitor	
1780R TEKTRONIX	Vector Scope	
1780R TEKTRONIX	SCH Meter	
	Audio Analyzer	
	Digital Volt Meter (D.V.M.)	
	Frequency Counter	
MINOLTA	Color Pyrometer and LUX Meter	20 - 20,000LUX
VFK0645	Grayscale Chart	11 Steps, g=0.45 Black=2.0% Reflection
	Lighting	2000LUX, 3200°K (500W)
PORTA PATTERN	Light Box (Spherical Type)	White Flat Pattern without any Shading
	Transparency Charts (Inmega chart) for Light Box	
VFK1194	Extension Board	
CANON or FUJINON or NIKON	Zoom Lens	

Setup of EVR Tool

1. Turn the power switches of the camera recorder and the EVR off. Connect the tools as shown in figure.



2. Turn the power of PC and EVR ON and then camera recorder ON.
3. Pressing [SHIFT],[+] and [-] buttons in operation panel, set the MENU SW to SET.
4. Press the PAGE button to open the SERVICE ADJ. menu. Select EVR in ECU CONNECT. After setting turn the MENU OFF.
5. Execute the CAM_TOOL.EXE on command prompt condition to start EVR program.
6. Follow the displayed instructions until MAIN MENU is shown. (If the bar graph stops before 100% and MAIN MENU is not opened, turn the power of I/F box (VFKW1000AA) OFF and ON. Then execute the EVR program again.)

Function (Ver.3.2)

MAIN MENU

1. BACK UP (DOWN LOAD) RAM DATA.
2. RESTORE (UPLOAD) RAM DATA.
3. PREPARATION OF ADJUSTMENT.
4. START ADJUSTMENT.
5. ELECTRICAL ADJUSTMENT.
6. E.V.R. DIRECT FUNCTIONS.
7. BACK UP (DOWN LOAD) RAM DATA.< OPTION >
8. RESTORE (UPLOAD) RAM DATA < OPTION >
9. CREATE ADJUSTMENT ITEM <PRODUCTION>
10. START ADJUSTMENT <PRODUCTION>

- 1, 2 : NV-RAM DATA is backed up and restored. Back up data is named as ----- . SAV. ".SAV" is automatically added. MENU data and adjustment data can be backed up.
- 3 ~ 5 : Not supported.
- 6 : Refer to next page.
- 7,8 : Blemish correction data can be backed up and restored The address is as follows.
5E60h-5E7Fh
9. : Not supported.
10. : Refer to next page.

E.V.R. Direct Functions

1. COMMAND INPUT FUNCTION

[EVR FUNCTION]

COMMAND : [00]

DATA : 00

ADDRESS : 00

[MACRO FUNCTION]

1. CAMERA RESET No. 1 [F1],[A]

2. CAMERA RESET No. 2 [F1],[B]

3. VF OUT [F1],[C]

4. MONITOR OUT LEVEL [F2],[0]

<<Page Up: INC Page Down: DEC >>

[↑] : Move To Up [↓] : Move To Down

[→] : Data Increment [←] : Data Decrement

[ESC] : Quit [Enter] : RAM Write

1. Select <6.E.V.R. DIRECT FUNCTIONS> in MAIN MENU, and next selection appears.
2. Select <1.COMMAND INPUT FUNCTION>, and COMMAND INPUT FUNCTION menu is available as shown above.
3. Input COMMAND, DATA and ADDRESS according to adjustment procedure.
4. After adjustment, press [ESC] key to quit.

Note:

1. After operating EVR, turn the VTR off and on.
2. When the SYSCON PROM is updated, execute the CAMERA RESET No.1 in COMMAND INPUT FUNCTION menu. Press the [F1] and [A] keys together, and then press [ENTER] key.
3. The difference between CAMERA RESET No.1 and No.2;

No.1 : Adjustment data isn't reset.
SETUP menu is reset.

No.2 : Adjustment data is also reset.

Start Adjustment

1. Select <10.START ADJUSTMENT> in MAIN MENU.
2. After selecting NTSC/PAL, press ENTER or ESC key to continue.
3. Adjustment items appear with command, data and address;

CMD	DATA	ADR	AREA
[02]	[00]	[04]	[00][FF]

CMD : Command.

DATA : Initial data. It is not factory data. It is not VTR data.

ADR : Address. Confirm the Service Manual that selected item is correct.

AREA: Adjustable range.

4. Select an adjustment item.
5. Following values are displayed;

Command	=	[02]
Data	=	[00]
Address	=	[04]
Read Data	=	[06]

Data : data to be sent to VTR.

Read Data : data sent from VTR.

6. To adjust VTR;
 - 1.Input data and press [ENTER] key.
 - 2.Press [+] or [-] key.
7. After adjustment, press [ENTER] key to quit.

Note:

1. After operating EVR, turn the VTR off and on.
2. START ADJUSTMENT menu is possible to read out data from VTR.

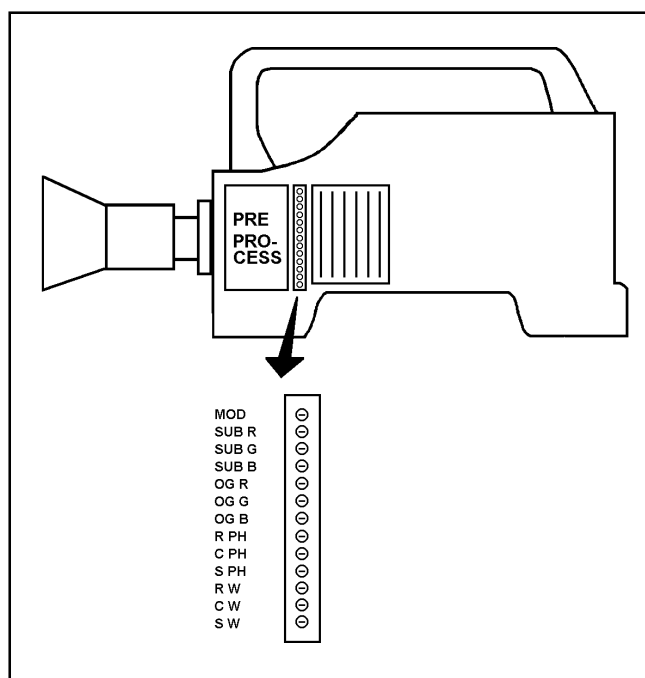
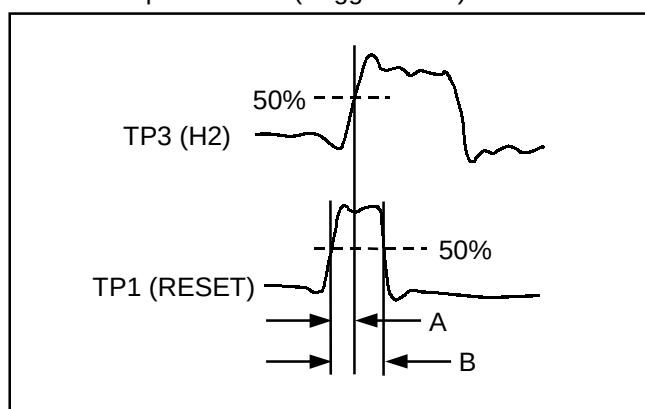
<Camera Section>

1. Head Optical Ass'y 1

1-1. Reset Pulse Adjustment

BOARD	Pulse
SPEC.	A = $5.0 \pm 1\text{ns}$, B = $10.0 \pm 1\text{ns}$
TEST	TP1 (R), TP3 (H2)
ADJUST	VR1 (R PH), VR4 (R W)
M.EQ	Oscilloscope

1. Remove the Head Optical Ass'y (camera unit).
2. Adjust the **VR4** so that the pulse **width B** at the **TP1** is within specification.
3. Adjust the **VR1** so that the phase **difference A** is within specification. (Trigger : TP3)



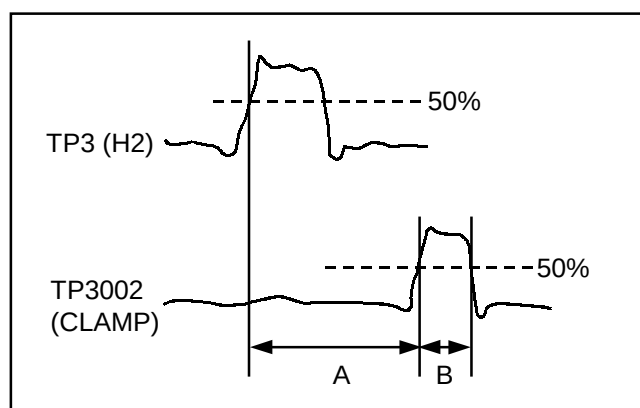
1-2. Clamp Pulse Adjustment

BOARD	Pulse
SPEC.	NTSC : A = $37.5 \pm 1\text{ns}$, B = $19.0 \pm 1\text{ns}$ PAL : A = $39.0 \pm 1\text{ns}$, B = $17.0 \pm 1\text{ns}$
TEST	TP3002 (CLMP) (CDS Board), TP3 (H2)
ADJUST	VR2 (C PH), VR5 (C W)
M.EQ	Oscilloscope

1. Adjust the **VR5** so that the pulse **width B (TP3002)** is within specification.
2. Adjust the **VR2** so that the phase **difference A** is within specification. (Trigger : TP3)

<Note>

1. If the adjustment is not completed even after the VR is fully turned, keep the VR where it is. (left end or right end)



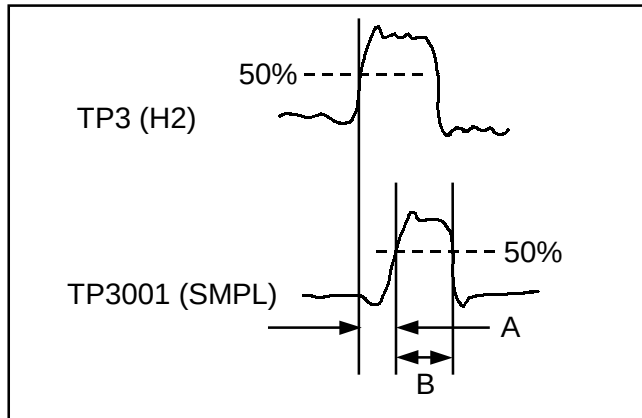
1-3. Sample Pulse Adjustment

BOARD	Pulse
SPEC.	NTSC : A = $25.0 \pm 1\text{ns}$, B = $16.0 \pm 1\text{ns}$ PAL : A = $27.5 \pm 1\text{ns}$, B = $16.0 \pm 1\text{ns}$
TEST	TP3001 (SMPL) (CDS Board), TP3 (H2)
ADJUST	VR3 (S PH), VR6 (S W)
M.EQ	Oscilloscope

1. Adjust the **VR6** so that the pulse **width B (TP3001)** is within specification.
2. Adjust the **VR3** so that the phase **difference A** is within specification. (Trigger : **TP3**)

<Note>

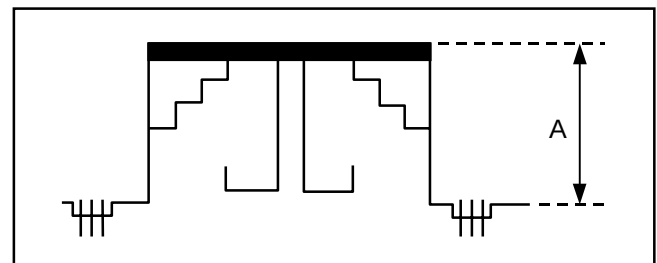
1. If the adjustment is not completed even after the VR is fully turned, keep the VR where it is. (left end or right end)



1-4. Reset DC Adjustment

BOARD	Pulse
SPEC.	A = Maximum
TEST	TP3203 (G S/H) (CDS Board)
ADJUST	VR13 (R DC), VR8 (SUB G)
F.NBR.	Open (2000LUX)
CHART	Grayscale Chart
M.EQ	Oscilloscope

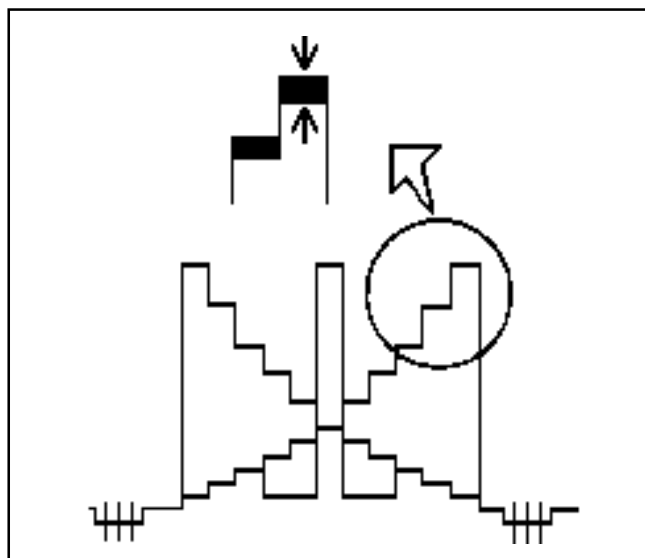
1. Set the **VR13** to the centre position.
2. Turn the **VR8** counterclockwise fully so that the saturation level depends on **R DC**.
3. Turn the **VR8** clockwise until the saturation level depends on **SUB G**.
4. Adjust the **VR13** so that the waveform level is maximized.
5. Install the Head Optical Ass'y (camera unit) again.



1-5. Carrier Leak Adjustment

BOARD	CDS
TEST	TP103 (R), TP203 (G), TP303 (B)
ADJUST	VC101 (R), VC201 (G), VC301 (B)
F.NBR.	F8 (2000LUX)
CHART	Grayscale Chart
M.EQ	Oscilloscope

1. Monitor the **TP103** and adjust the **VC101** so that the carrier leak is minimized.
2. Monitor the **TP203** and adjust the **VC201** so that the carrier leak is minimized.
3. Monitor the **TP303** and adjust the **VC301** so that the carrier leak is minimized.



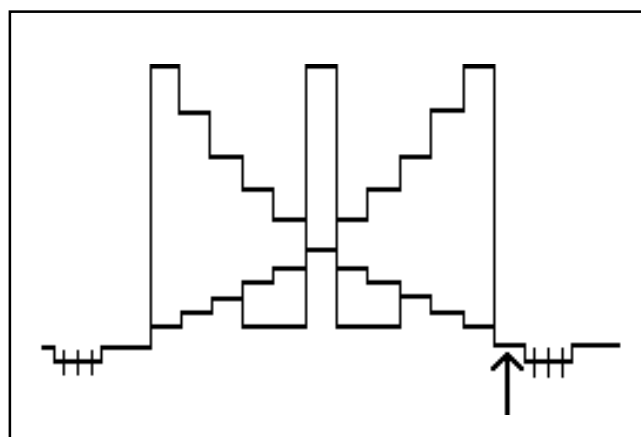
1-6. CDS OUT DC Adjustment

BOARD	CDS
SPEC.	150 ± 50mV
TEST	TP103 (R), TP203 (G), TP303 (B)
ADJUST	VR102 (R), VR202 (G), VR302 (B)
F.NBR.	F8
CHART	Grayscale Chart
M.EQ	Oscilloscope

1. Monitor the **TP103** and adjust the **VR102** so that the black level is within specification.
2. Monitor the **TP203** and adjust the **VR202** so that the black level is within specification.
3. Monitor the **TP303** and adjust the **VR302** so that the black level is within specification.

<Note>

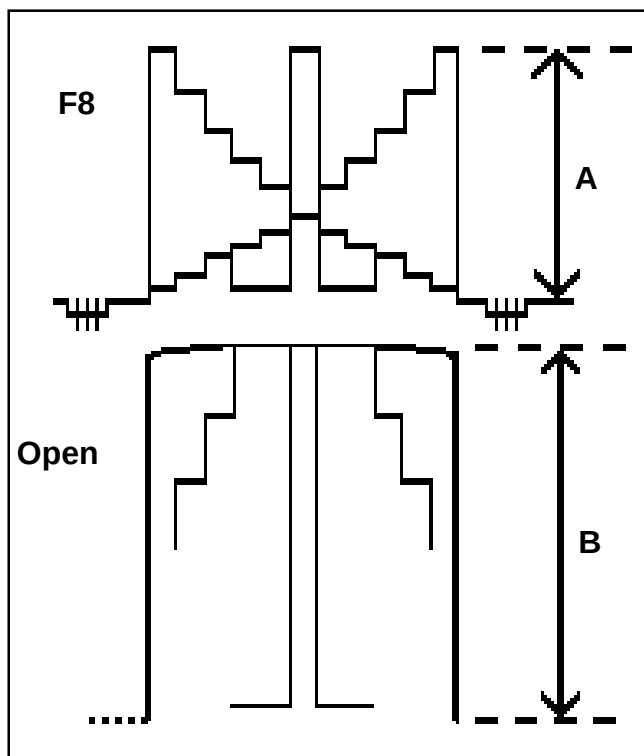
1. In case that it is difficult to recognize the black level, close the iris.
2. Monitor the center of the carrier because there is carrier on the black level.



1-7. SUB Voltage Adjustment 1

BOARD	Pulse
SPEC.	$B/A = 4 \pm 0.2$
TEST	TP103 (R), TP203 (G), TP303 (B), TP4 (R DC)
ADJUST	VR7 (R), VR8 (G), VR9 (B), VR13 (R DC)
F.NBR.	F8 (2000LUX), Open
CHART	Grayscale Chart
M.EQ	Oscilloscope, Digital Volt Meter

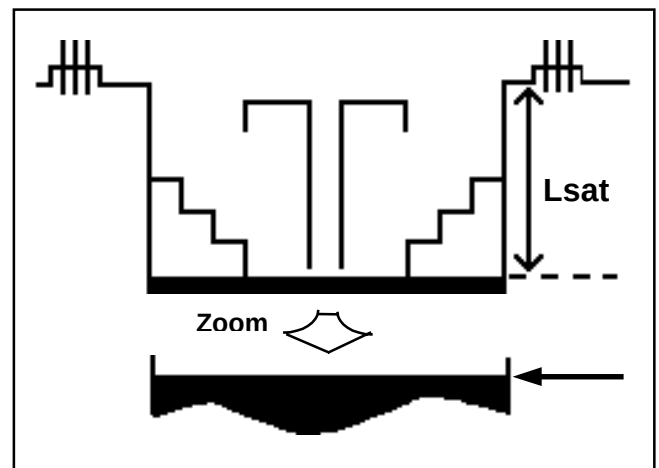
1. Monitor the **TP203 (G)** on the CDS Board and measure the **Level A** in IRIS F8.
2. Measure the **Level B** in IRIS open.
3. Adjust the **VR8 (SUB-G)** so that the **B/A ratio** is within specification.
4. Adjust the **VR13** so that the **Level B** is maximized. (Exceeding specification is no problem if the voltage at **TP4** is more than 1.7V.)
5. Repeat 1 to 4 to adjust G ch.
6. Monitor the **TP103 (R)** and adjust the **VR7 (SUB-R)** in the same way. (Do not adjust **VR13**.)
7. Monitor the **TP303 (B)** and adjust the **VR9 (SUB-B)** in the same way. (Do not adjust **VR13**.)
8. After the adjustment confirm the “1-6. CDS OUT DC” adjustment again.



1-8. SUB Voltage Adjustment 2

BOARD	Pulse
SPEC.	$L_{sat} = 2600 \pm 50mV$
TEST	TP2, TP202, TP402 (Pre Process)
ADJUST	VR7 (R), VR8 (G), VR9 (B)
F.NBR.	Open (2000LUX)
CHART	Grayscale Chart
M.EQ	Oscilloscope

1. Monitor the **TP2** on the Pre Process Board and adjust the **VR7** so that the voltage **Lsat** is within specification.
2. Monitor the **TP202** on the Pre Process Board and adjust the **VR8** so that the voltage **Lsat** is within specification.
3. Monitor the **TP402** on the Pre Process Board and adjust the **VR9** so that the voltage **Lsat** is within specification.



1-9. SUB Voltage Confirmation

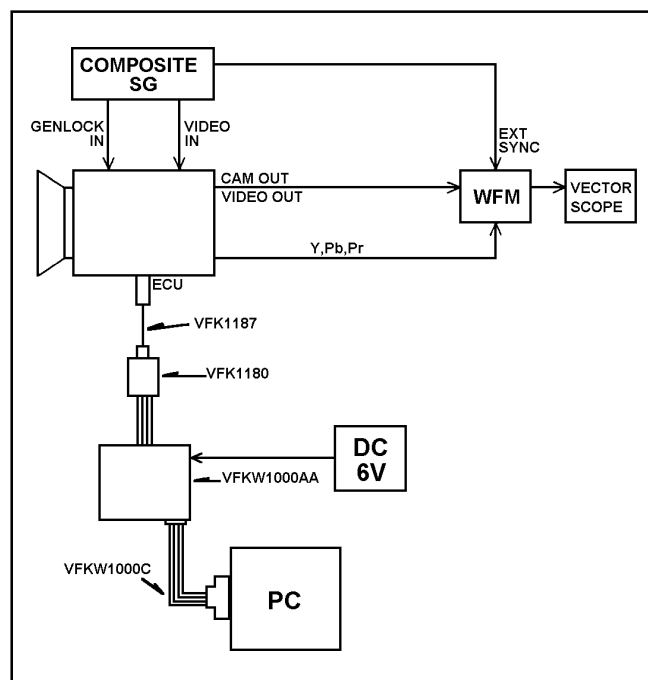
BOARD	Pulse
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR7 (R), VR8 (G), VR9 (B)
M.EQ	Color Monitor TV, 500W Halogen Lamp

1. Shoot the halogen lamp so that it is one tenth as large as the size of monitor.
2. Confirm that the blooming part has no color.
3. If that part has some color, execute “1-7. SUB Voltage Adjustment 1” and “1-8. SUB Voltage Adjustment 2”.

2. Video Main and DSP

2-1. Initial Setting

- Set the Camera Recorder as follows:
AUTO W/B BAL : OFF
SHUTTER : OFF
GAIN : L
OUTPUT : BAR
WHITE BAL : PRE
- Turn the power switches of the camera recorder and the EVR **OFF**.
- Connect the EVR with ECU connector as shown in figure.
- Turn the power of EVR **ON** and then Camera Recorder **ON**.
- Pressing [SHIFT], [+] and [-] buttons in operation panel, set the MENU SW to SET.
- Press the PAGE button to open the SERVICE ADJ. menu. Select EVR in ECU CONNECT.
- After setting turn the MENU **OFF**.
- Execute the CAM_TOOL. EXE to start EVR program. (Refer to **Setup of EVR Tool**.)



2-2. D3.0V Adjustment

BOARD	Video Main
SPEC.	3.15V+0.05V / -0.00V
TEST	TP9
ADJUST	VR5 (Power)
MODE	REC
M.EQ	Digital Volt Meter

- Adjust the **VR5** on Power board so that the voltage at the **TP9** is within specification.

2-3. Ref DC for A/D Adjustment

BOARD	DSP
SPEC.	2.0 ± 0.001V
TEST	TP6
ADJUST	VR1
M.EQ	Digital Volt Meter

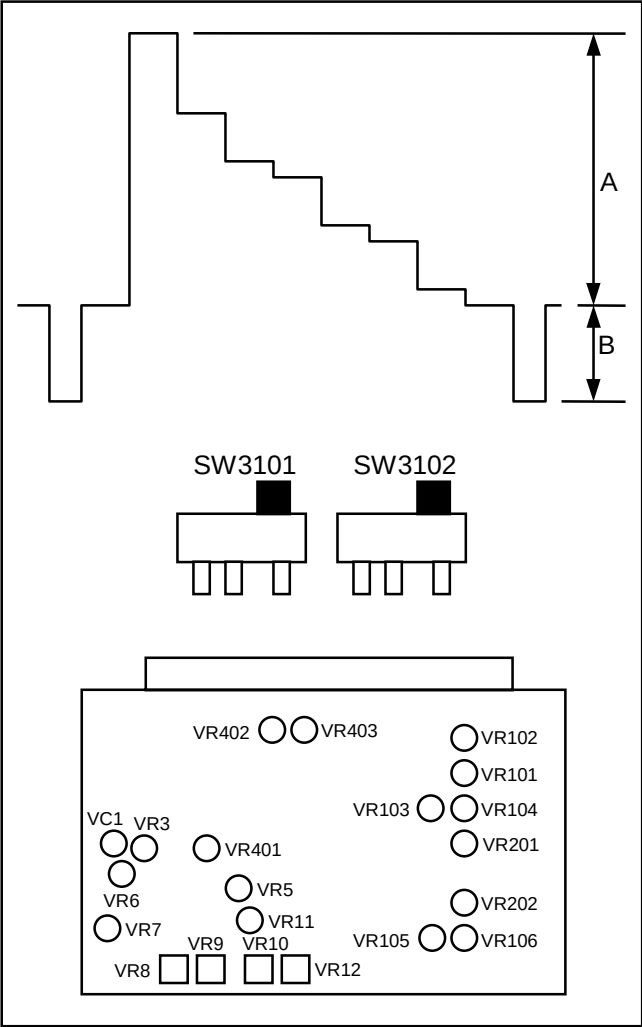
- Confirm that the DC voltage at **TP6** is within specification, and adjust the **VR1** in case of need.

3. Encoder

3-1. Y & SYNC Levels Adjustment 1

BOARD	Encoder
SPEC.	A = $700 \pm 14\text{mV}$, B = $300 \pm 6\text{mV}$
TEST	TP104
ADJUST	VR101, VR102, SW101, SW102
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor

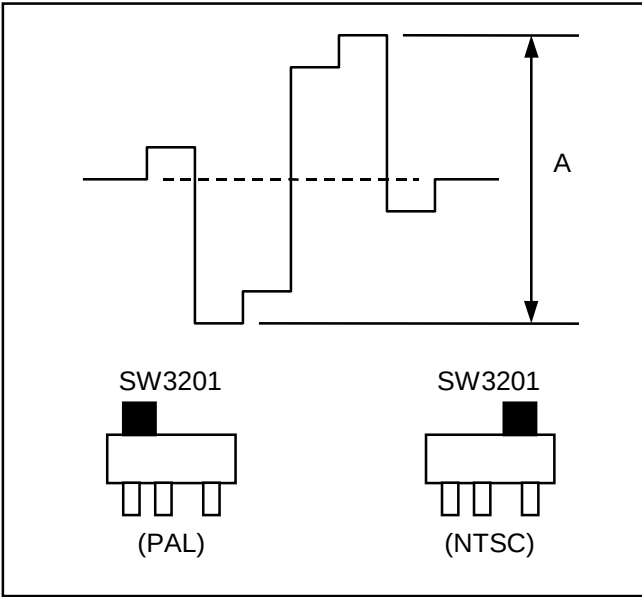
1. Confirm that the **SW101** and **SW102** are turned **ON** as shown in figure.
2. Monitor the **TP104** and adjust the **VR102** so that the **Level A** is within specification.
3. Adjust the **VR101** so that the **Level B** is within specification.



3-2. Pr Level Adjustment

BOARD	Encoder
SPEC.	NTSC : A = $700 \pm 14\text{mV}$ PAL : A = $525 \pm 10\text{mV}$
TEST	TP203
ADJUST	VR201, SW201
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor

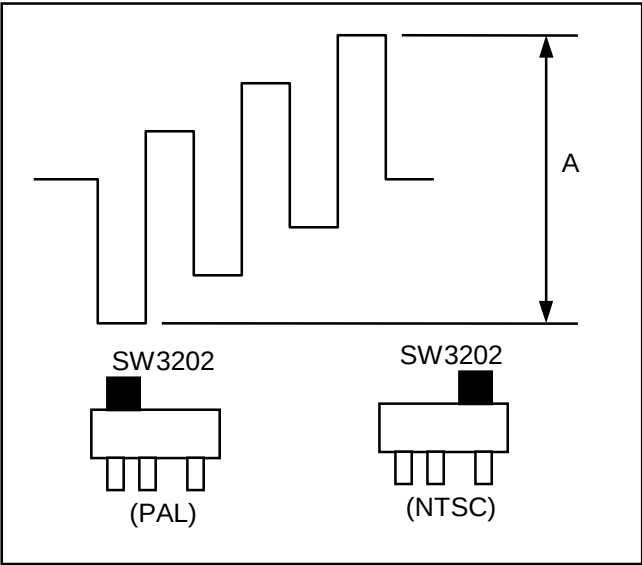
1. Set the **SW201** as shown in figure and adjust the **VR201** so that the **Level A** is within specification.



3-3. Pb Level Adjustment

BOARD	Encoder
SPEC.	NTSC : A = 700 ± 14mV PAL : A = 525 ± 10mV
TEST	TP204
ADJUST	VR202, SW202
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor

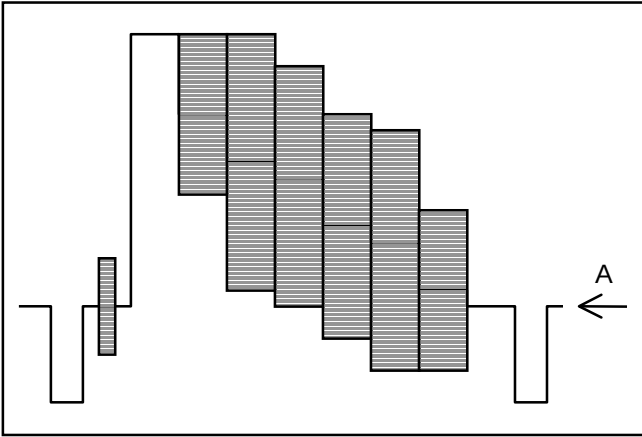
1. Set the **SW202** as shown in figure and adjust the **VR202** so that the **Level A** is within specification.



3-4. CAM DC Adjustment

BOARD	Encoder
SPEC.	A = 0 ± 10mV
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR11
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor

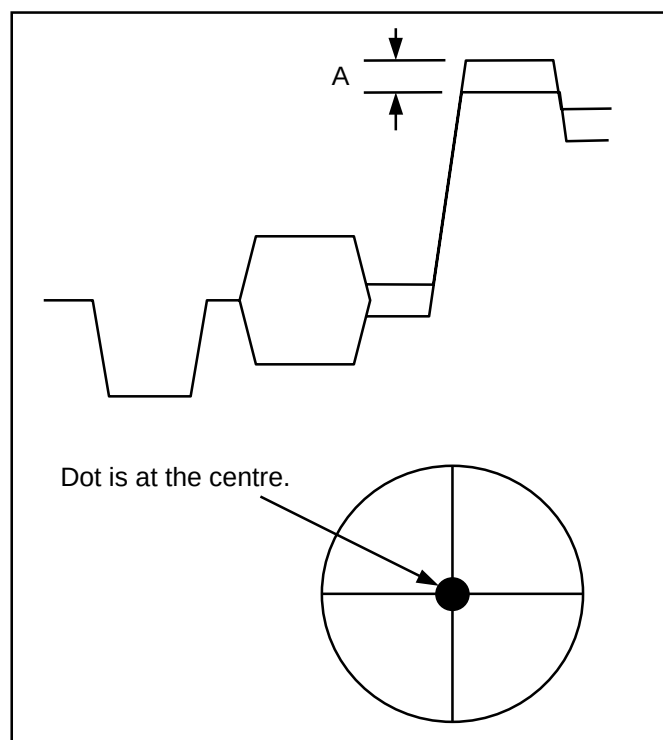
1. Adjust the **VR11** so that the **DC voltage** is within specification.



3-5. Carrier Balance Adjustment

BOARD	Encoder
SPEC.	A = Minimum, Dot at the centre
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR8, VR9
MODE	Camera Bar
M.EQ	Waveform Monitor, Vector Scope

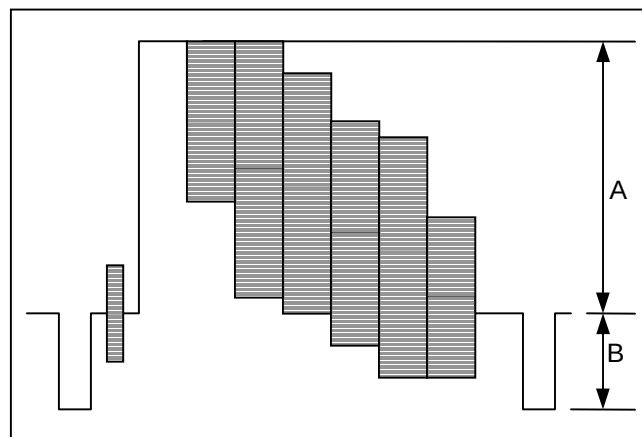
1. Adjust the **VR8** so that the **width A** is minimized.
2. Adjust the **VR9** as well as **VR8**.
3. Repeat the above steps until the **width A** is minimized.



3-6. Y & SYNC Levels Adjustment

BOARD	Encoder
SPEC.	NTSC : A = $714 \pm 15\text{mV}$, B = $286 \pm 6\text{mV}$ PAL : A = $700 \pm 14\text{mV}$, B = $300 \pm 6\text{mV}$
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR12, VR105, VR106
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor

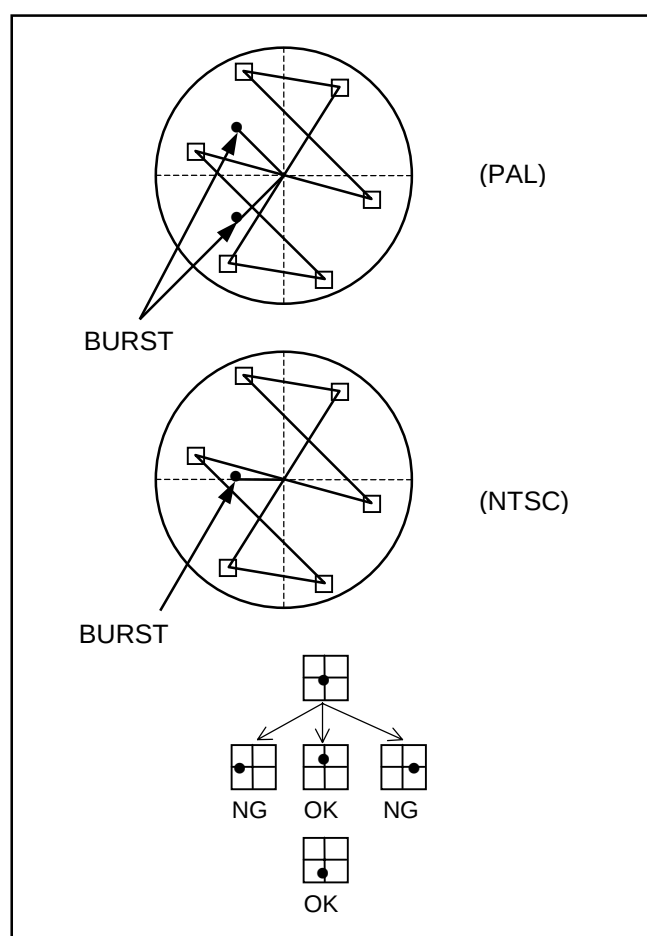
1. Set the **VR12** to centre position.
2. Adjust the **VR106** so that the **level A** is within specification.
3. Adjust the **VR105** so that the **level B** is within specification.



3-7. Burst Level & Vector Adjustment

BOARD	Encoder
TEST	CAM OUT (75 Ω terminated)
ADJUST	VC1, VR3, VR5, VR6, VR7 (PAL), VR10 (NTSC)
MODE	Camera Bar
M.EQ	Vector Scope

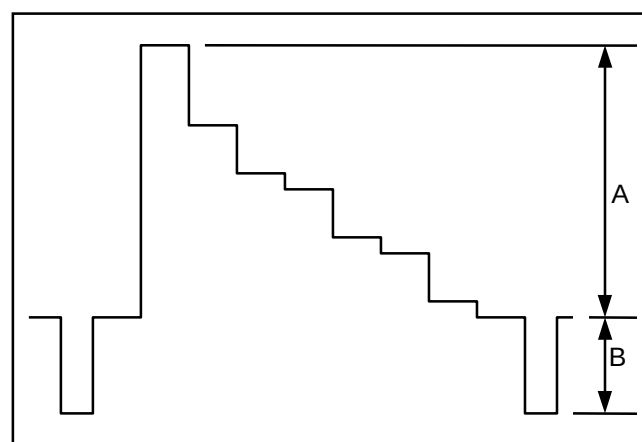
1. Set the **VR7 (for PAL)** or **VR10 (for NTSC)** to centre position.
2. Adjust the **VC1** so that both burst levels are the same.
3. Adjust the **VR6** and **VR7 (for PAL)** or **VR10 (for NTSC)** so that both bursts are fixed on scales.
4. Adjust the **VR3, VR5** and **VC1** so that all colour phase are fixed on scales



3-8. Video Out & Sync Adjustment

BOARD	Encoder
SPEC.	NTSC : A = $714 \pm 15\text{mV}$, B = $286 \pm 6\text{mV}$ PAL : A = $700 \pm 14\text{mV}$, B = $300 \pm 6\text{mV}$
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR104, VR103
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor, EVR

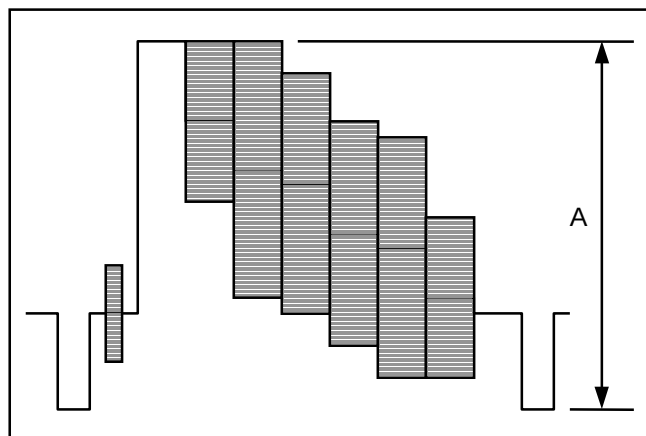
1. Press the [F2] and [0] in EVR and confirm that the EVR display indicates [1E][02][00].
2. (Video out : Y out)
3. Connect the Waveform Monitor with VIDEO OUT and adjust the **VR104** so that the **level A** is within specification.
4. Adjust the **VR103** so that the **level B** is within specification.



3-9. Return Video Level Adjustment

BOARD	Encoder
SPEC.	$A = 1.0V \pm 20mV$
TEST	VIDEO OUT
ADJUST	VR403
MODE	Video In : Colour Bar
M.EQ	Oscilloscope, Waveform Monitor, EVR, Signal Generator

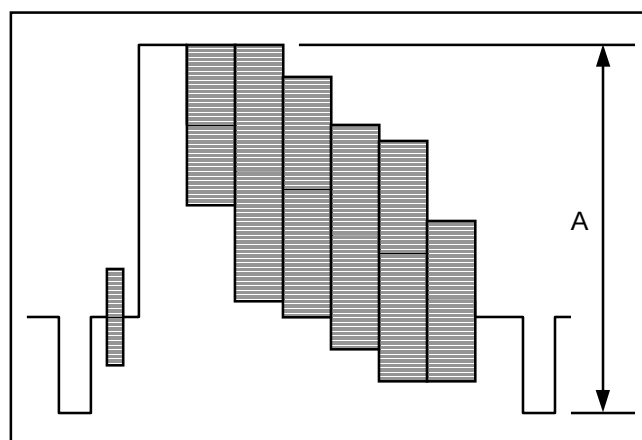
1. Mounting the VIDEO IN connector (Accessory). See operating instruction page 17.
2. Input the colour bar signal to VIDEO IN connector.
3. Confirm that the EVR display indicates [1E][02][00] and then press the [→] to set the EVR to [1E][03][00]. Otherwise press the [CMD][1E][DATA][03][ADR][00][SET] to input [1E][03][00].
4. Connect the Waveform Monitor with VIDEO OUT and adjust the **VR403** so that the **level A** is within specification.

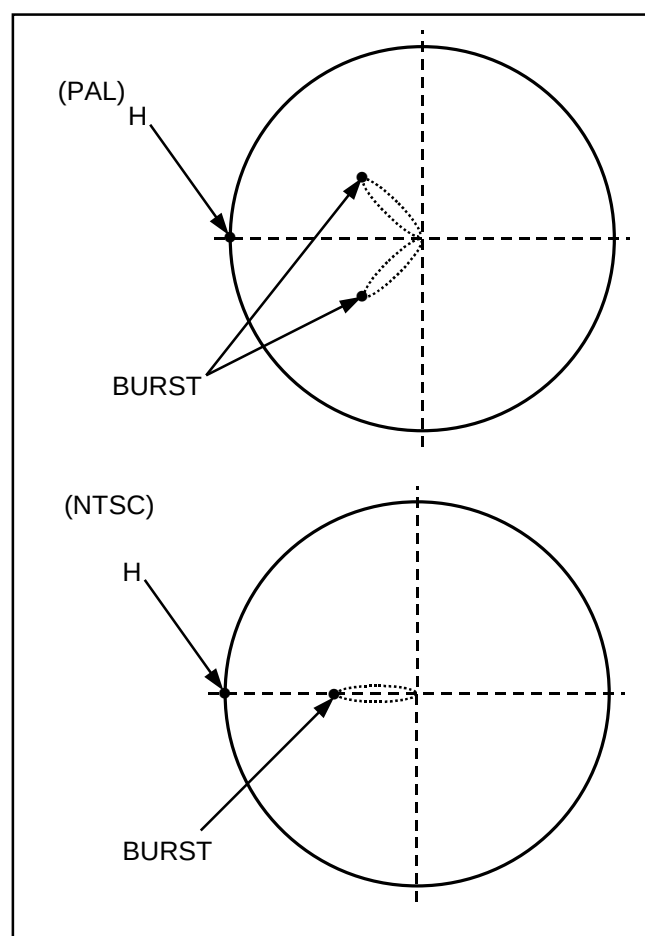


3-10. Mon Enc Level Adjustment

BOARD	Encoder
SPEC.	$A = 1.0V \pm 20mV$
TEST	VIDEO OUT
ADJUST	VR401
MODE	Camera Bar
M.EQ	Oscilloscope, Waveform Monitor, EVR

1. Confirm that the EVR display indicates [1E][03][00] and then press the [→] to set the EVR to [1E][04][00]. Otherwise press the [CMD][1E][DATA][04][ADR][00][SET] to input [1E][04][00].
2. Connect the Waveform Monitor with VIDEO OUT and adjust the **VR401** so that the **level A** is within specification.

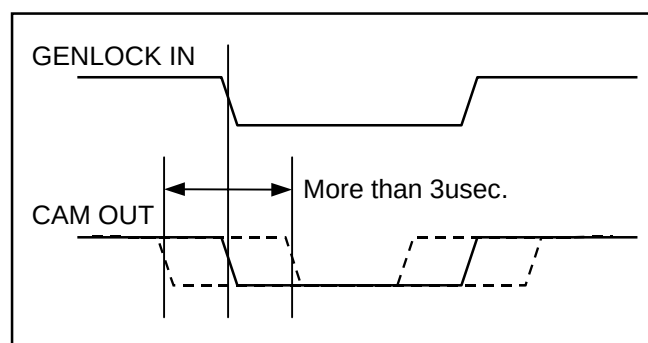




4-4. System Phase Adjustment 1

BOARD	Sync
TEST	CAM OUT
ADJUST	VR6
INPUT	Composite (RS-170A)
MODE	Camera Bar
M.EQ	Oscilloscope, EVR

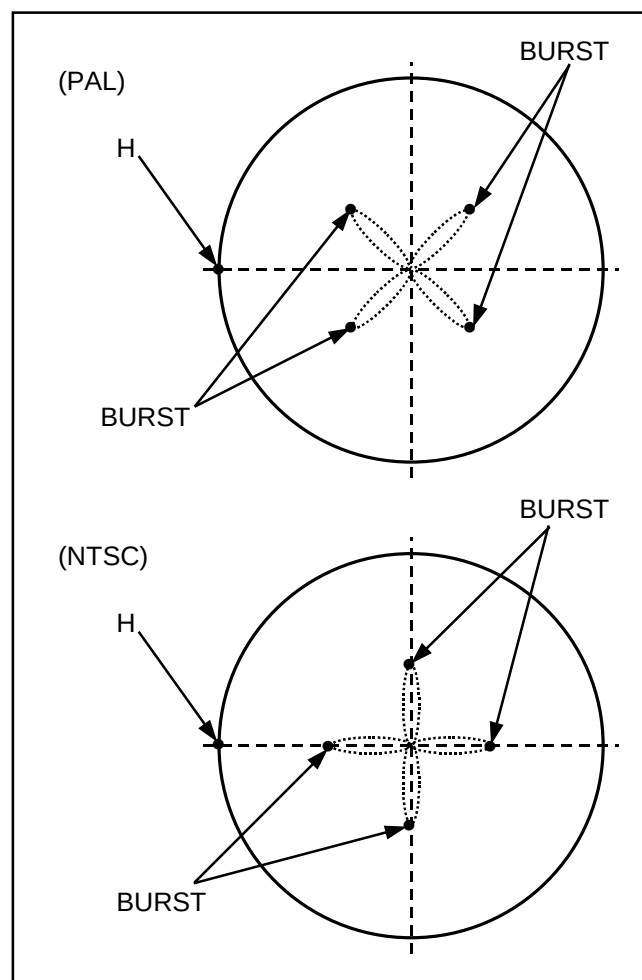
1. Set the EVR to [1E][14][00].
2. Confirm that the composite signal is input to GEN LOCK IN.
3. Adjust the **VR6** so that CAM OUT and GEN LOCK IN are the same in sync phase.



4-5. System Phase Adjustment 2

BOARD	Sync
TEST	CAM OUT
ADJUST	VR6, VR7
INPUT	Composite (RS-170A)
MODE	Camera Bar
M.EQ	SCH Meter, EVR

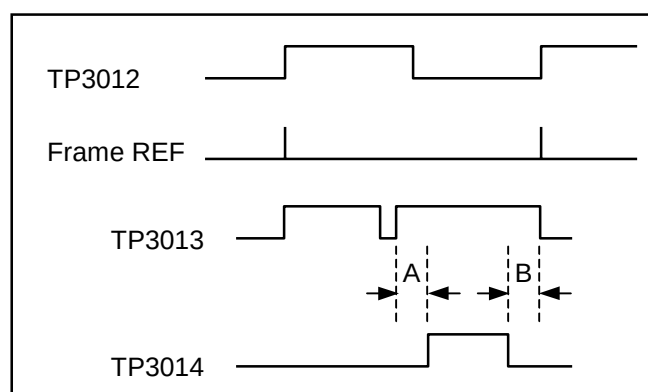
1. Set the SCH Meter to EXT mode.
2. Set the EVR to [1E][15][00].
3. Adjust the **VR6** slightly so that CAM OUT and GEN LOCK IN are the same in H phase.
4. Confirm that the BURST phase changes at 90° step.
5. Set the EVR to [1E][19][00].
6. Press the [→] or [←] and confirm that the BURST phase changes.
7. Set the EVR to [1E][1C][00].
8. Adjust the **VR7** slightly so that CAM OUT and GEN LOCK IN are the same in BURST phase.



4-6. REF SCH Adjustment (for PAL only)

BOARD	Sync
SPEC.	$A = B \pm 10\%$
TEST	TP3012, 3013, 3014
ADJUST	VR3002
M.EQ	Oscilloscope

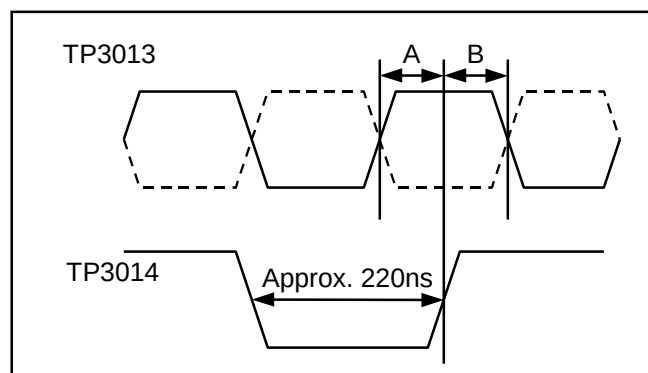
1. If it is impossible to make “4-3. SCH Phase Adjustment”, try this item.
2. Adjust the **VR3002** so that the relation between frame pulse from signal generator and **TP3012** is as shown in the figure. (Course adjustment)
3. Adjust the **VR3002** so that the relation between **TP3013** and **TP3014** is within specification.



4-7. REF SCH Adjustment (for NTSC only)

BOARD	Sync
SPEC.	$A = B \pm 10\%$
TEST	TP3013, 3014
ADJUST	VR3002
M.EQ	Oscilloscope

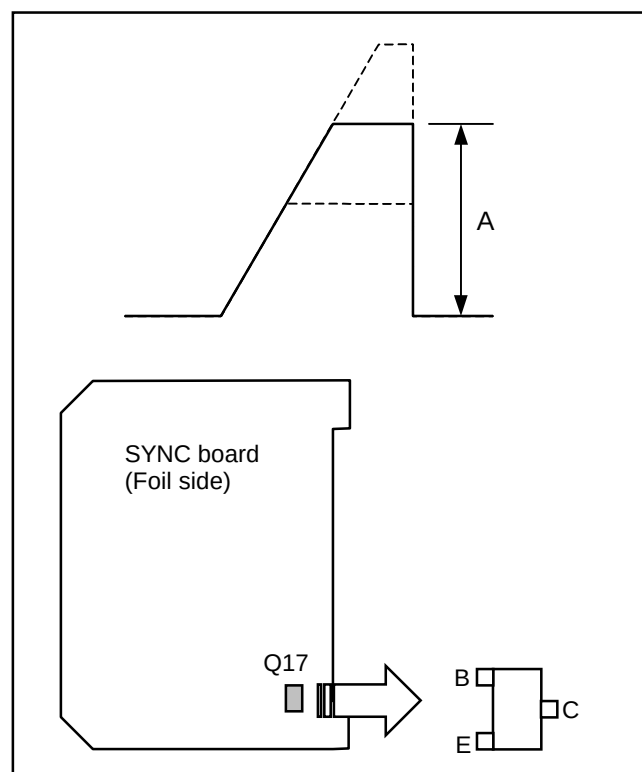
1. If it is impossible to make “4-3. SCH Phase Adjustment”, try this item.
2. Adjust the **VR3002** so that the **A** and **B** are within specification.



4-8. Test Signal Level Adjustment

BOARD	SYNC
SPEC.	$A = 1.9 \pm 0.1V$
TEST	Q3017-Emitter
ADJUST	VR3011
MODE	Test Signal
M.EQ	Oscilloscope, EVR

1. Set the EVR to [1E][22][00].
2. Monitor the **Q3017-Emitter** and adjust the **VR3011** so that the **level A** is within specification.



5. Head Optical Ass'y 2

5-1. AWB Preset Level Adjustment

BOARD	CAM SYSCON
SPEC.	$2.0 \pm 0.01V$
TEST	TP3514 (AWB R), TP3515 (AWB B) TG3500 (GND)
ADJUST	EVR
MODE	-----
M.EQ	Digital Volt Meter, EVR

1. Set the AWB SW to "PRESET" mode.
2. Connect the DVM to **TP3514 (AWB R)** and **TG3500 (GND)**.
3. Set the EVR to [0E][66][61]. And press the [→] or [←] key in EVR so that the **DC voltage** is within specification.
4. Connect the DVM to **TP3515 (AWB B)** and **TG3500 (GND)**.
5. Set the EVR to [0E][66][62], and press the [→] or [←] key in EVR so that the **DC voltage** is within specification.
6. Turn the power switch to **OFF**.

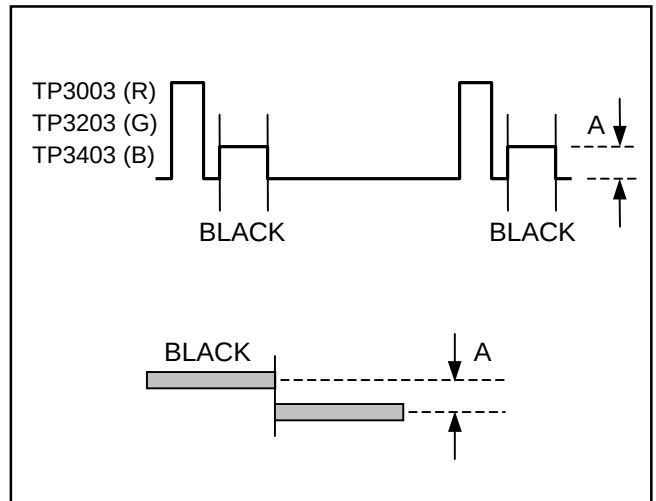
5-2. RGB Pedestal Adjustment

BOARD	Pre Process
SPEC.	$A = 0 \pm 50mV$
TEST	TP3 (R), TP203 (G), TP403 (B)
ADJUST	VR1 (R), VR201 (G), VR401 (B)
F.NBR.	Close
M.EQ	Oscilloscope, EVR

1. Press the [F2] and [2] keys in EVR or input [1E][20][00].
(Set the "PED R, G, B" signal to ; 2.0VDC)
2. Monitor the **TP3** and adjust the **VR1 (R PED)** so that the **blanking level** is flat.
3. Monitor the **TP203** and adjust the **VR201 (G PED)** so that the **blanking level** is flat.
4. Monitor the **TP403** and adjust the **VR401 (B PED)** so that the **blanking level** is flat.

<Note>

Monitor the centre of the carrier because there is carrier on the **Black Level** And **Pedestal Level**.



5-3. 0% ABB Adjustment

BOARD	Pre Process
SPEC.	-----
TEST	-----
ADJUST	EVR
MODE	-----
M.EQ	EVR

<Note>

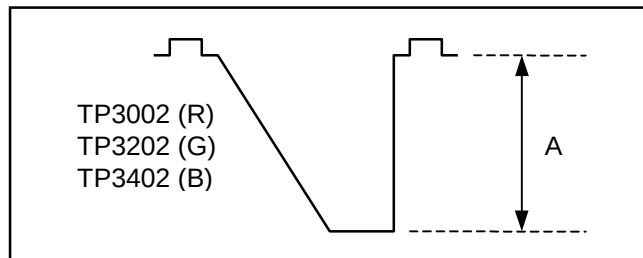
From next "5-4. Test Signal Level Adjustment" are necessary this **0% ABB setting**. If perform the adjustment individually, this **0% ABB setting** must be done before adjustment.

1. Set the EVR to [1E][21][00].
2. Execute the ABB by front switch.

5-4. RGB Test Signal Level Adjustment

BOARD	Pre Process
SPEC.	$A = 666 \pm 10\text{mV}$
TEST	TP2 (R), TP202 (G), TP402 (B)
ADJUST	VR3015 (R), VR3013 (G), VR3014 (B) (Sync board)
MODE	Test Signal
M.EQ	Oscilloscope, EVR

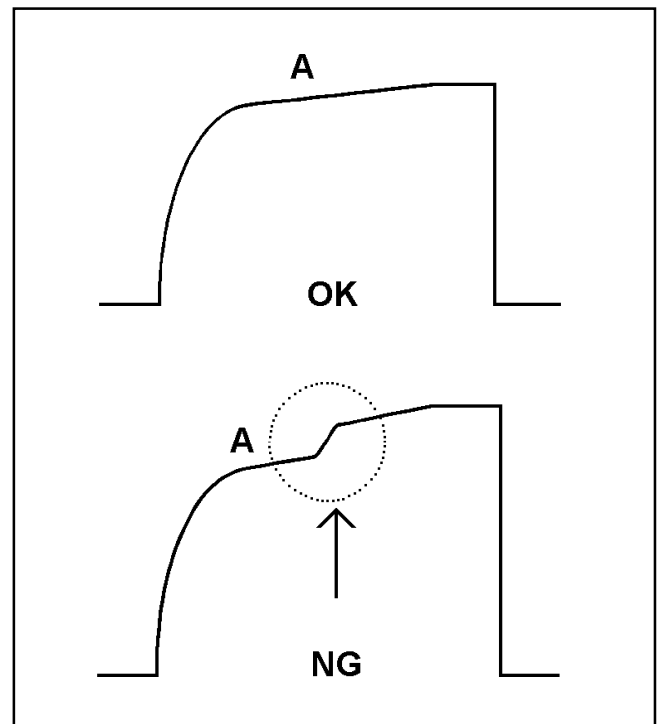
1. Set the EVR to [1E][22][00].
2. Monitor the **TP2** and adjust the **VR3015 (R)** so that the **level A** is within specification.
3. Monitor the **TP202** and adjust the **VR3013 (G)** so that the **level A** is within specification.
4. Monitor the **TP402** and adjust the **VR3014 (B)** so that the **level A** is within specification.



5-5. RGB A/D Input Level Adjustment 1

BOARD	Pre Process
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR2 (R), VR202 (G), VR402 (B)
MODE	Test Signal
M.EQ	Waveform Monitor, EVR

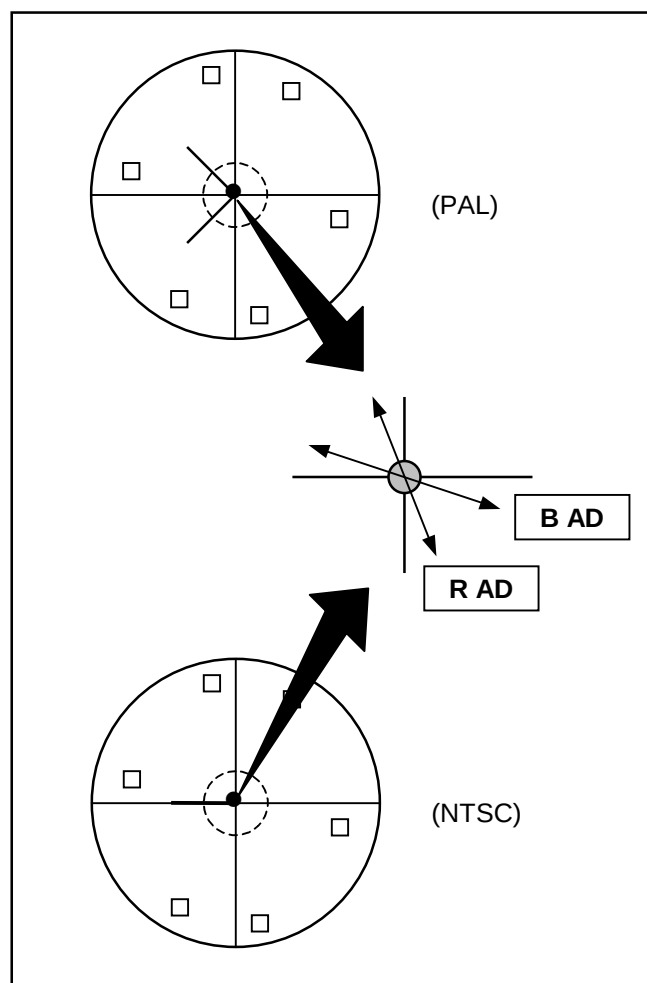
1. Set the EVR to [1E][23][00]. (**R ch** is selected.)
2. Adjust the **VR2** to increase the A/D level And then stop adjusting just before the **A portion** is uneven.
3. Set the EVR to [1E][24][00]. (**G ch** is selected.)
4. Adjust the **VR202** to increase the A/D level And then stop adjusting just before the **A portion** is uneven.
5. Set the EVR to [1E][25][00]. (**B ch** is selected.)
6. Adjust the **VR402** to increase the A/D level And then stop adjusting just before the **A portion** is uneven.



5-6. RGB A/D Input Level Adjustment 2

BOARD	Pre Process
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR2 (R), VR402 (B)
MODE	Test Signal
M.EQ	Vector Scope

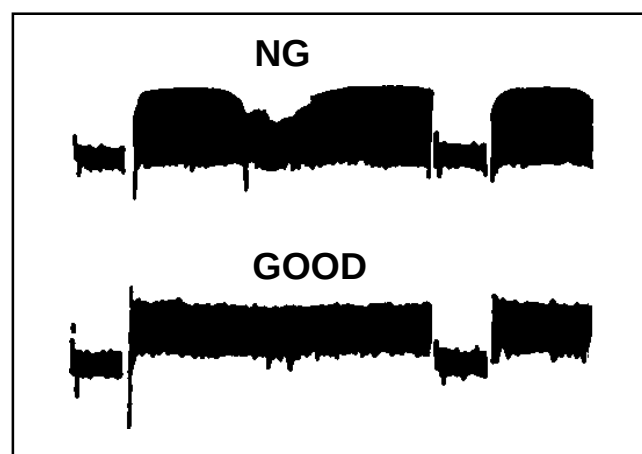
1. Set the Test saw on the Service ADJ menu to **ON**.
2. Set the GAIN to +9dB and Auto Knee to **OFF**.
3. Set the Vector Scope Gain to MAX.
4. Fine-adjust the **VR2** and **VR402** so that the dot is at the center of the vector scope.



5-7. Shading Balance Adjustment

BOARD	Pre Process
SPEC.	Flat
TEST	TP3 [R], TP203 [G], TP403 [B]
ADJUST	VR4 [R BAL] , VR204 [G BAL], VR304 [B BAL]
F.NBR.	F8+1/3(2000LUX), Optical Filter:1
CHART	Grayscale Chart (3200°K)
M.EQ	Oscilloscope, Lux Meter, Color Pyrometer

1. Shoot the Grayscale chart.
2. Perform the Digital White shading.
 - 1) Set the EVR to [1E][30][00].
(GAIN = 0dB, Knee = OFF)
 - 2) Set the EVR to [1E][31][00]
(Start the Digital White Shading collection)
(While executing, '*' or 'ACTIVE' is displayed on EVF.)
3. Close the IRIS.
4. Monitor the **TP3** and adjust **VR4** so that the carrier is minimized as shown in figure.
5. Monitor the **TP203** and adjust **VR204** so that the carrier is minimized as shown in figure.
6. Monitor the **TP403** and adjust **VR304** so that the carrier is minimized as shown in figure.
7. Perform the Digital White Shading again with no shading white chart.
(See 5-13 Digital White Shading)



5-8. RGB Pedestal Tracking Adjustment

BOARD	Pre Process
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR3 (R), VR403 (B)
F.NBR.	Close
M.EQ	Vector Scope, EVR

- Pressing [SHIFT], [→] and [←] buttons in operation panel, turn the MENU SW **on**.
- Press the PAGE button to open the following menus and remember the number. And then set to **zero**.

LEVEL 4/6 : R, G, B FLARE

: R, B GAMMA

SERVICE ADJ. : R, B GAMMA

- Set the EVR to [1E][28][00]. (Master PED = MAX)
- Set the Vector Scope to Gain : MAX.
- Adjust the **VR3** and **VR403** so that the dot is at the center of the vector scope.
- Press [→] key to set to [1E][29][00]. (Master PED = minimum) Confirm that the dot is still at the center of the vector scope.
- If not, repeat 3, 5 and 6.
- After adjustment, the data of following menus set to original number.

LEVEL 4/6 : R, G, B FLARE

: R, B GAMMA

SERVICE ADJ. : R, B GAMMA

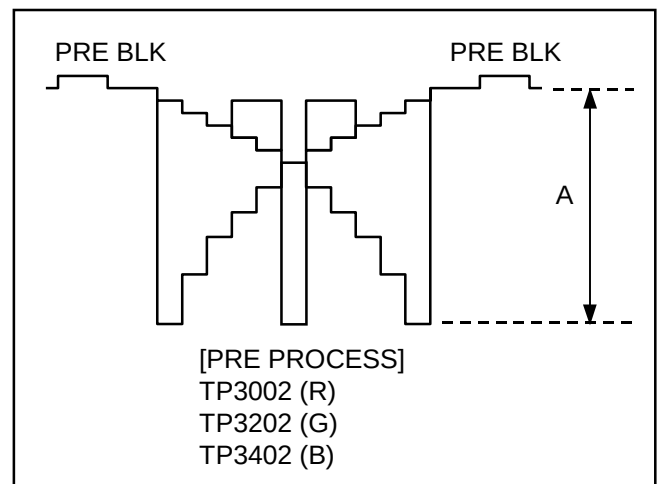
<Note>

- Adjust the **VR3** to move **vertically** and the **VR403** **horizontally**.

5-9. RGB Sample & Hold Level Adjustment 1

BOARD	Pre Process
SPEC.	A = $666 \pm 10\text{mV}$
TEST	TP2 (R), TP202 (G), TP402 (B)
ADJUST	VR101 (R), VR201 (G), VR301 (B) (CDS Board)
F.NBR.	F8+1/3 (2000LUX), Optical Filter : 1
CHART	Grayscale Chart (3200°K)
M.EQ	Oscilloscope, Lux Meter, Color Pyrometer

- Set as follows :
CAM/BAR : CAM ON
AWB : NEUTRAL
GAIN : L
- Don't use an extender of lens.
- Set the EVR to [1E][27][00].
(GAIN = 0dB, Knee = OFF, TEST SIG = OFF)
- Monitor the **TP2** and adjust the **VR101 (R LVL)** so that the **level A** is within specification.
- Monitor the **TP202** and adjust the **VR201 (G LVL)** so that the **level A** is within specification.
- Monitor the **TP402** and adjust the **VR301 (B LVL)** so that the **level A** is within specification.



5-10. Vertical Pattern Noise Confirmation & Adjustment

BOARD	Pulse
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR3
F.NBR.	Close
M.EQ	Monitor TV, EVR

1. Set the EVR to [1E][36][00]
(GAIN = +18dB, Pedestal = 30%).
2. Execute the **ABB** function.
3. Confirm that there is no fixed pattern noise vertically with lens closed.
4. If there is, set the EVR to [1E][37][00],
(GAIN = +18dB, Pedestal = 30%, Detail = OFF,
2DLPF = ON, Masking = OFF)
and then adjust the **VR3**, remember the original
position of **VR3**, so that the noise is minimized.
(If the noise is not decreased, set **VR3** to the
original position again.)

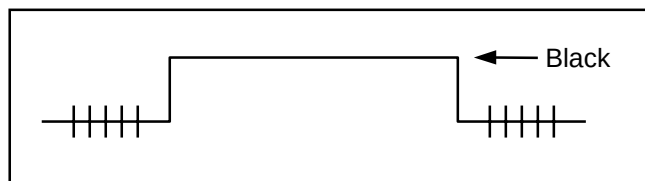
5-11. CDS DC Adjustment

BOARD	CDS
SPEC.	150 $\pm$ 50mV
TEST	TP103 (R), TP203 (G), TP303 (B)
ADJUST	VR102 (R), VR202 (G), VR302 (B)
F.NBR.	Close
M.EQ	Oscilloscope

1. Monitor the **TP103** and adjust the **VR102** so that
the black level is within specification.
2. Monitor the **TP203** and adjust the **VR202** so that
the black level is within specification.
3. Monitor the **TP303** and adjust the **VR302** so that
the black level is within specification.

<Note>

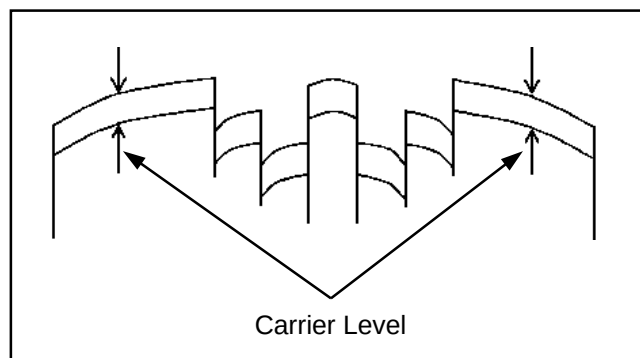
1. Monitor the center of the carrier because there is
carrier on the black level.



5-12. High-Light Carrier Level Adjustment

BOARD	Pulse
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR7 (SUB R), VR9 (SUB B)
CHART	Grayscale Chart
M.EQ	Waveform Monitor, EVR

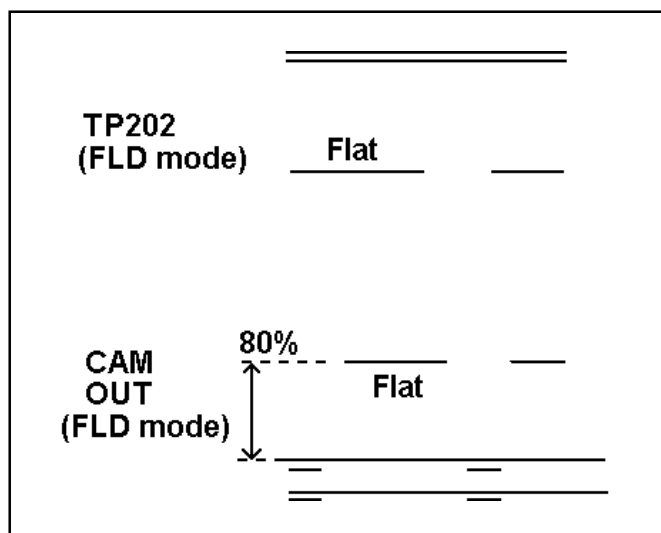
1. Set the EVR to [1E][3A][00].
2. Select PRESET position in **AWB mode**.
3. Execute the **ABB** function.
4. Open the iris until upper three steps are saturated
in grayscale waveform as shown in figure.
5. Adjust the **VR7** and **VR9** alternately so that the
carrier level is minimized. (less than 6IRE)
6. After the adjustment, confirm the "**5-11. CDS DC
Adjustment**".



5-13. Analog White Shading Adjustment

BOARD	Pre Process
TEST	CAM OUT (75 Ω terminated), TP202
ADJUST	EVR
M.EQ	Waveform Monitor, Vector Scope, EVR, Lens (Built-in Extender) Light Box (Spherical Type)

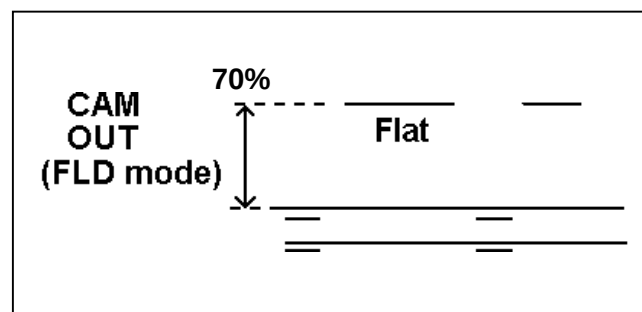
1. Set the EVR to [1E][2E][00].
2. Open the iris until the peak level is 80% in CAM OUT **without extender**.
3. Select **A position** in **AWB mode** and execute the AWB function.
4. Execute the **ABB** function.
5. Adjust the iris to 80% again until the peak level is 80% and execute the **AWB** function.
6. Set the EVR to [0E][80][0E].
7. Monitor the **TP202** in waveform monitor (field mode) and press [→] or [←] key in EVR so that the waveform is flat.
8. Input [1E][2F][00] in EVR to execute the analog white shading. (While executing, '*' or 'ACTIVE' is displayed on EVF.)
9. Execute the **AWB** function.
10. Monitor the **TP202** in vector scope and confirm that the dot is round and around the center of the scope.
11. Open the iris until the peak level is 80% in CAM OUT **with extender**.
12. Execute the **AWB** function and repeat 6 to 10.



5-14. Digital White Shading Adjustment

TEST	CAM OUT (75 Ω terminated)
ADJUST	EVR
M.EQ	Waveform Monitor, Vector Scope, EVR, Lens (Built-in Extender) Light Box (Spherical Type)

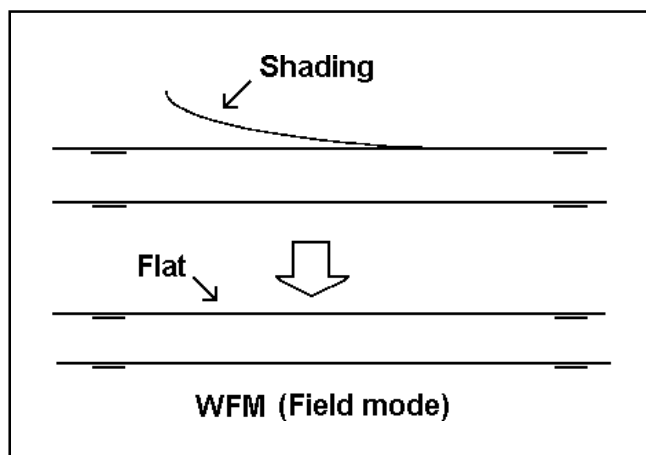
1. Set the EVR to [1E][30][00].
2. Open the iris until the peak level is 70% in CAM OUT **without extender**.
3. Select **A position** in AWB mode and execute the AWB function.
4. Input [1E][31][00] in EVR to execute the digital white shading. (While executing, '*' or 'ACTIVE' is displayed on EVF.)
5. Execute the AWB function.
6. Monitor the CAM OUT in waveform monitor (field mode) and confirm that the waveform is flat.
7. Monitor the CAM OUT in vector scope and confirm that the dot is round and around the center of the scope.



5-15. Auto Dark Shading Adjustment

TEST	CAM OUT (75 Ω terminated)
ADJUST	EVR
F.NBR.	Close
M.EQ	Waveform Monitor, EVR

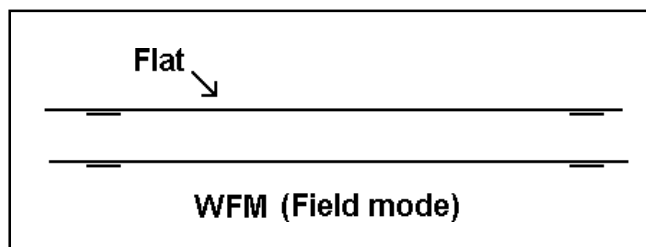
1. Set the AWB position to PRE.
2. Execute the ABB function.
3. Input [1E][2A][00] in EVR to confirm executing the auto dark shading.
4. Monitor the CAM OUT in waveform monitor (field mode) and confirm that the waveform is made flat.
5. Confirm that the shading is completed and waveform is flat.



5-16. Digital Dark Shading Adjustment

TEST	CAM OUT (75 Ω terminated)
ADJUST	EVR
F.NBR.	Close
M.EQ	Waveform Monitor, EVR

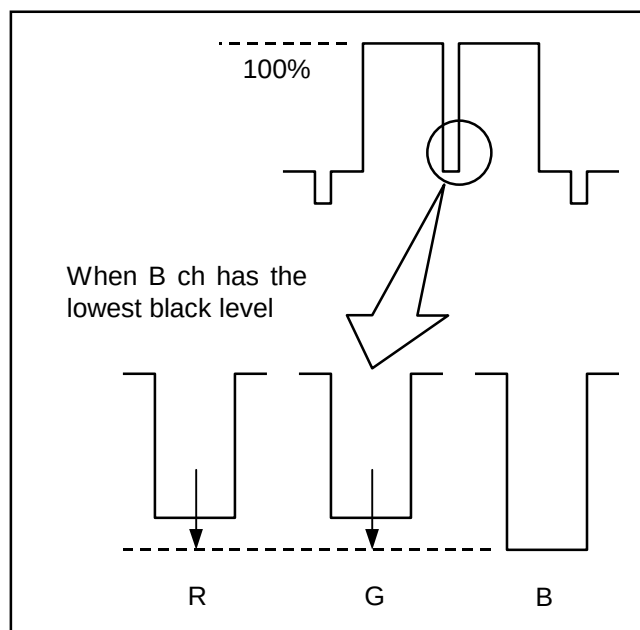
1. Set AWB position to PRE.
2. Input [1E][2B][00] in EVR.
3. Input [1E][2D][00] in EVR to execute the digital dark shading. (While executing, '*' or 'ACTIVE' is displayed on EVF.)
4. Monitor the CAM OUT in waveform (field mode) monitor and confirm that the waveform is flat.



5-17. Flare Correction Adjustment

TEST	VIDEO OUT (75 Ω terminated)
ADJUST	EVR
F.NBR.	(2000LUX)
CHART	Flare chart
M.EQ	Waveform Monitor, S/N Meter, EVR

1. Set the EVR to [1E][27][00].
2. Open the iris until white level is 80%.
3. Execute AWB function in the A ch and then ABB function.
4. Adjust the iris again and execute AWB function in the A ch.
5. Open the iris until white level is 100%.
6. Open the iris 1.5 steps more, for example, F8 to F5.6-1/2.
7. Input [1E][32][00] in EVR to select R ch and measure the black level.
8. Input [1E][33][00] in EVR to select G ch and measure the black level.
9. Input [1E][34][00] in EVR to select B ch and measure the black level.
10. Don't adjust the channel which has the lowest black level.
11. Adjust the black levels of other two channels to the level of the channel mentioned above No.9 with EVR. The ways to change the black levels are as shown below.
 - (R ch) After inputting [1E][32][00] and then [0E][00][0B], press [→] or [←] key.
 - (G ch) After inputting [1E][33][00] and then [0E][00][0C], press [→] or [←] key.
 - (B ch) After inputting [1E][34][00] and then [0E][00][0D], press [→] or [←] key.



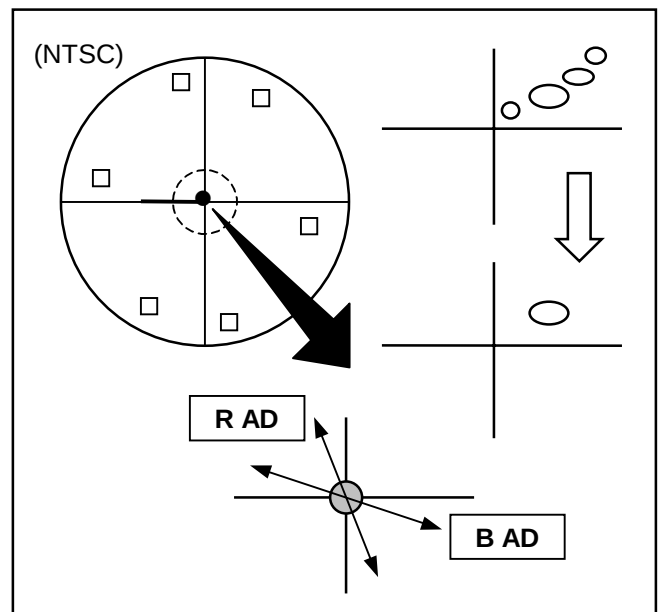
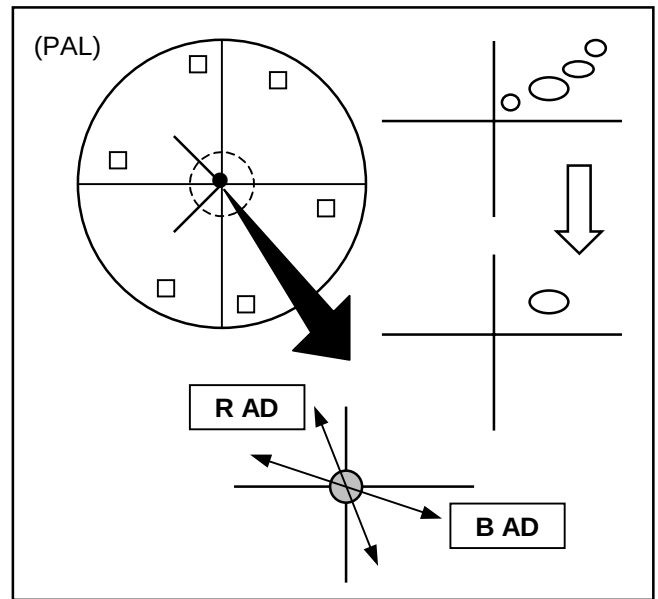
5-18. R_γ & B_γ Adjustment

BOARD	CDS
TEST	CAM OUT(75 Ω terminated)
ADJUST	VR101(R LVL), VR301(B LVL), EVR
F.NBR.	(2000LUX)
CHART	Grayscale Chart (3200°K)
M.EQ	Vector Scope, Lux Meter, Color Pyrometer, EVR

1. Set the Vector Scope to Gain : MAX.
2. Set the EVR to [1E][27][00].
3. Select PRESET position in AWB mode.
4. Execute the ABB function.
5. Open the iris until the peak level is 100% in CAM OUT **without extender**.
6. Confirm that the iris No. is F8 to F8-1/2.
7. When the dot is divided, adjust the **R_γ** and **B_γ** with EVR according to the following procedure so that the dots are joined.
8. **R_γ**: After inputting [0E][00][09] in EVR,
9. press the [→] or [←] to adjust.
10. **B_γ**: After inputting [0E][00][0A] in EVR,
11. press the [→] or [←] to adjust.
12. Confirm that the dot is at the center of the vector scope. If not, adjust the **VR101 (R LVL)** and **VR301 (B LVL)**.

<Note>

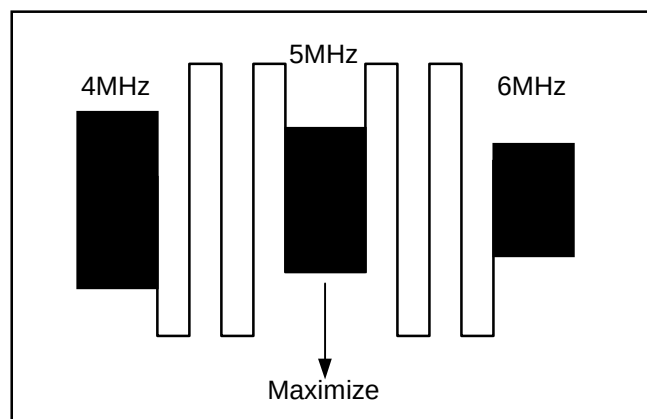
1. Vertically divided : Adjust **R_γ**
Horizontally divided : Adjust **B_γ**



5-20. Modulation Adjustment

BOARD	Pulse, Sync
SPEC.	MAX at 5MHz
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR14 (MOD) (Pulse) VR201, VR202, VR203 (Sync)
CHART	Immaga Chart
M.EQ	Waveform Monitor, EVR

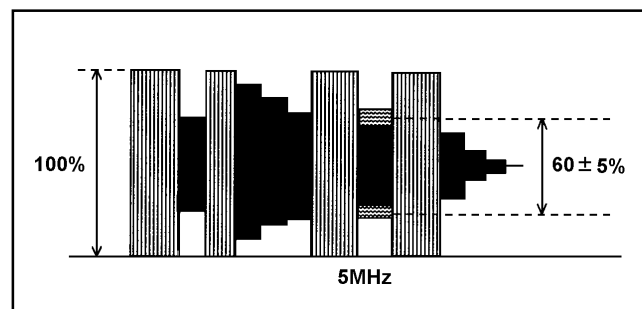
1. Turn the **VR14** fully counterclockwise.
2. Set Gain SW to **L**.
3. Press the [F2] and [3] keys to set the EVR to [1E][35][00].
4. Open the iris until white level is 80%.
5. Execute AWB function in the A ch.
6. Open the iris until white level is 90%.
7. Turn the **VR201 (Sync)** counterclockwise fully.
8. Turn the **VR201** clockwise until the level At 5MHz is maximized first.
9. Set shutter to 1/2000.
10. Set Gain SW to **M**.
11. Repeat from 6 to 8 with **VR202 (Sync)**.
12. Set Gain SW to **H**.
13. Repeat from 6 to 8 with **VR203 (Sync)**.
14. Set shutter OFF and Gain L.



5-21. Modulation Confirmation

BOARD	Pulse
SPEC.	$60 \pm 5\%$ at 5MHz
TEST	CAM OUT (75 Ω terminated)
ADJUST	VR2 (CLMP PH) (Pulse)
CHART	Immaga Chart
M.EQ	Waveform Monitor, EVR

1. Press the [F2] and [3] keys to set the EVR to [1E][35][00].
2. Open the iris until white level is 80%.
3. Execute AWB function in the A ch.
4. Open the iris F5.6 – F4.
5. Confirm that the level At 5MHz is within specification.
6. If not, fine-adjust the **VR2**. When **VR2** is adjusted, open the iris until white level is 80% and execute AWB function in the A ch.
7. Confirm that the level at 5MHz is within specification. ($60 \pm 10\%$ is accepted only when **VR2** is fully-turned.)
8. When **VR2** is adjusted, repeat from Modulation Adjustment.
9. Finally, set the EVR to [1E][3A][00].



<VTR Section>

6. Video Main & Video I/F

6-1. Audio VCO Adjustment

BOARD	Video Main
SPEC.	$A = B \pm 5\%$
TEST	TP8 (VCO ADJ.)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

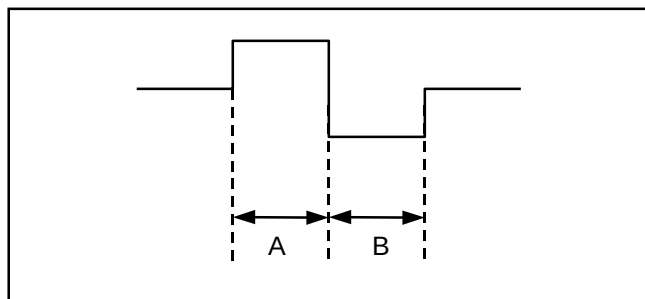
PAGE : SERVICE ADJ.

IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 82 ADR : 04

1. Press [→] or [←] key in EVR so that **A** equals to **B**.



6-2. DA C Level Adjustment (for NTSC only)

BOARD	Video Main
SPEC.	$A = 0.30 \pm 0.02V$
TEST	TP4 (DA C)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

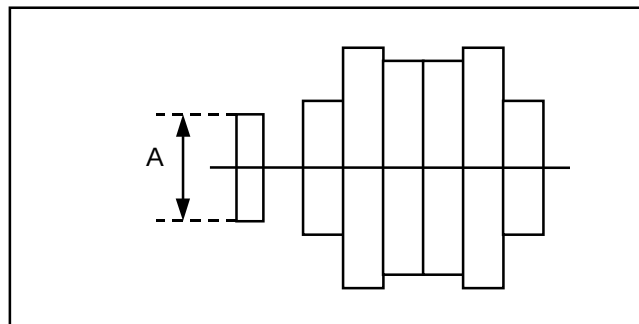
PAGE : SERVICE ADJ.

IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : ?? ADR : 03

1. Press [→] or [←] key in EVR so that the **level A** is within specification.



6-3. Sync Level Adjustment (for NTSC only)

BOARD	Video Main
SPEC.	$A = 0.286 \pm 0.004V$
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR6 (Y)
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

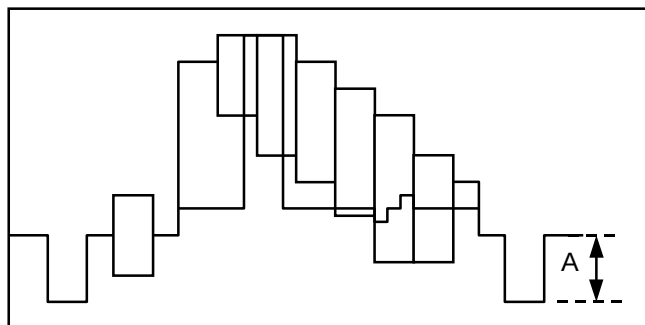
REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : OFF

1. Adjust the **VR6 (Y)** so that the **level A** is within specification.



6-4. Y Level Adjustment (for NTSC only)

BOARD	Video Main
SPEC.	$A = 1.00 \pm 0.02V$
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

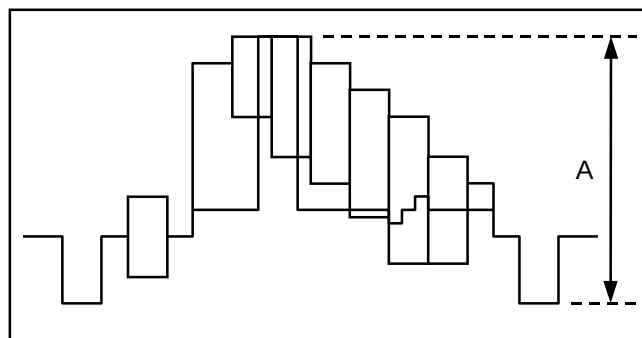
PAGE : SERVICE ADJ.

IF ADJ. : OFF

EVR Setting

CMD : 02 ADR : 02

1. Press [→] or [←] key in EVR so that the **level A** is within specification.



6-5. Burst Level Adjustment (for NTSC only)

BOARD	Video Main
SPEC.	Burst Level = 75%
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR7 (C)
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Vector Scope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

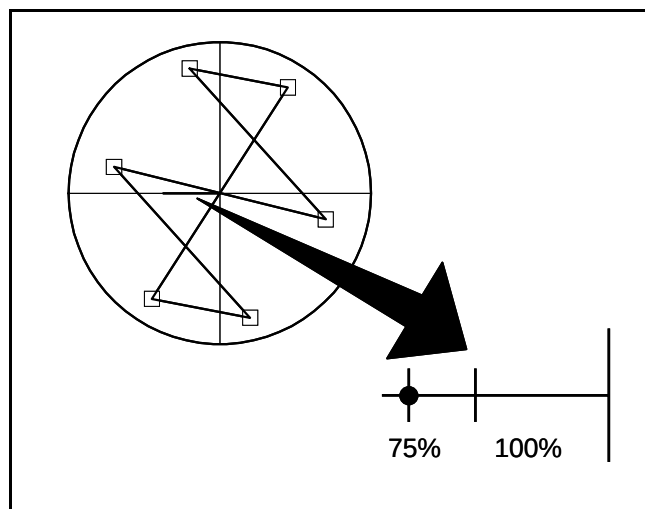
REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : OFF

1. Adjust the **VR7 (C)** so that the **bust level** is within specification.



6-6. Y Frequency Adjustment (for NTSC only)

BOARD	Video Main
SPEC.	B/A = 5.0MHz $\pm$ 0.5dB
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR5 (Y TMG)
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

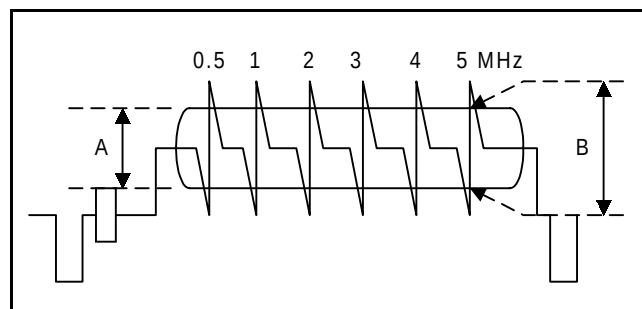
REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : OFF

1. Adjust the **VR5 (Y TMG)** so that the **B/A** is within specification.



6-7. Y/C Timing Adjustment (for NTSC only)

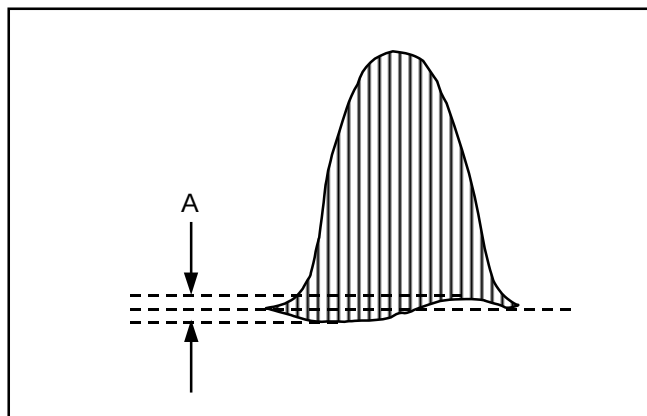
BOARD	Video I/F
SPEC.	A = Minimum (Flat)
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR5 (Y TMG)
INPUT	CAMERA Colour Bar
MODE	PLAY
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

DESIGN : Y/C TIMING

1. After menu setting, turn **OFF** the switch and then turn **ON** again, and confirm that the level A.
2. Adjust the Y/C TIMING on MENU so that the level A is almost flat, and then adjust slightly by the **VR5**.



6-8. Video AD Input Level Adjustment (for NTSC only)

BOARD	Video I/F
SPEC.	A = $2.3 \pm 0.05V$
TEST	TP1 (AD CPS)
ADJUST	VR1 (CPS LEV)
INPUT	CAMERA Colour Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

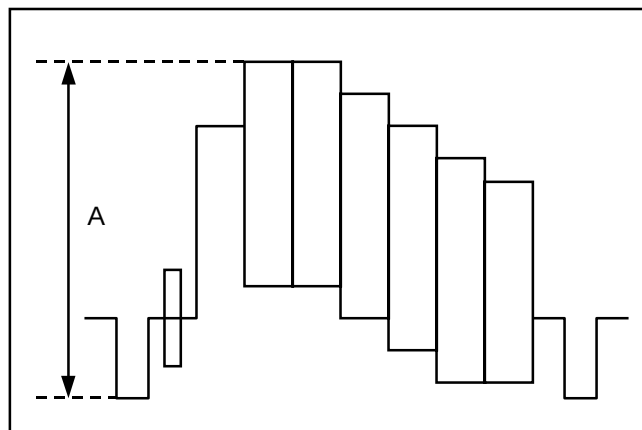
REC SIGNAL : VIDEO

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : OFF

1. Input the color bar signal to VIDEO IN connector and adjust the **VR1** so that the **level A** is within specification.



6-9. APC Adjustment (for NTSC only)

BOARD	Video I/F
SPEC.	14.31818MHz $\pm$ 40Hz
TEST	TP2 (4FSC)
ADJUST	EVR
INPUT	No Burst
MODE	EE
M.EQ	Frequency Counter

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 REC SIGNAL : VIDEO
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 9C ADR : 1C

1. Input the **composite signal (without Burst)** to VIDEO IN.
2. Press [→] or [←] key in EVR so that the frequency at the **TP2** is within specification.

6-10. Out Bias Adjustment (for NTSC only)

BOARD	Video I/F
SPEC.	$B = A \pm 3\%$
TEST	TP207 (AD PB)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

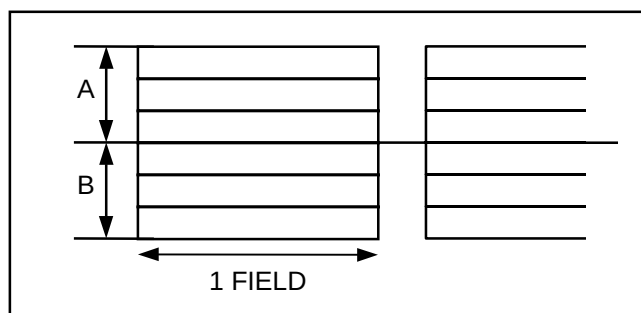
1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 REC SIGNAL : VIDEO
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 8D ADR : 1A

1. Monitor the **TP207** and press [→] or [←] key in EVR so that the **level A** and **B** are the same.



6-11. Hue Adjustment (for NTSC only)

BOARD	Video I/F
SPEC.	$B = A \pm 10\%$
TEST	TP207 (AD PB)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

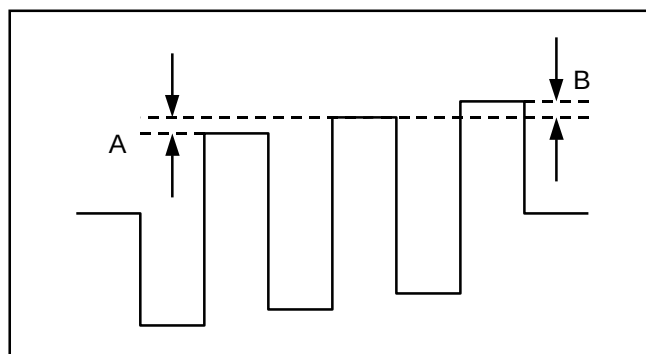
1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 REC SIGNAL : VIDEO
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : D0 ADR : 19

1. Monitor the **TP207** and press [→] or [←] key in EVR so that the **level A** and **B** are the same.



6-12. PLL POS Adjustment

BOARD	Video I/F
SPEC.	$B = A \pm 10\%$
TEST	TP201 (HP), TP202 (HWIN)
ADJUST	EVR
INPUT	CAMERA Colour Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

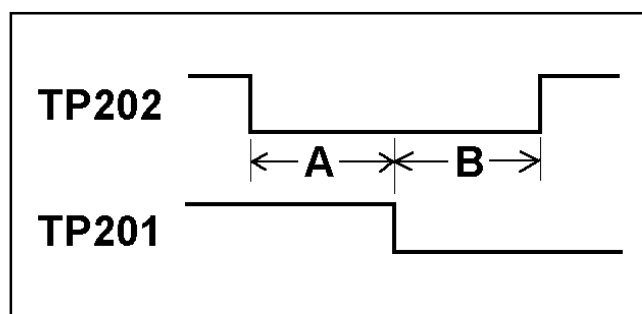
1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows :

PAGE : FUNCTION 3/5
 REC SIGNAL : **CAM** (NTSC only)
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 77 ADR : 1B

1. Press [→] or [←] key in EVR so that **A** equals to **B**.



6-13. ENC Y & Sync Level Adjustment (for PAL only)

BOARD	Video I/F
SPEC.	A = $700 \pm 15\text{mV}$, B = $300 \pm 4\text{mV}$
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR602, EVR
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Waveform Monitor

Menu Setting

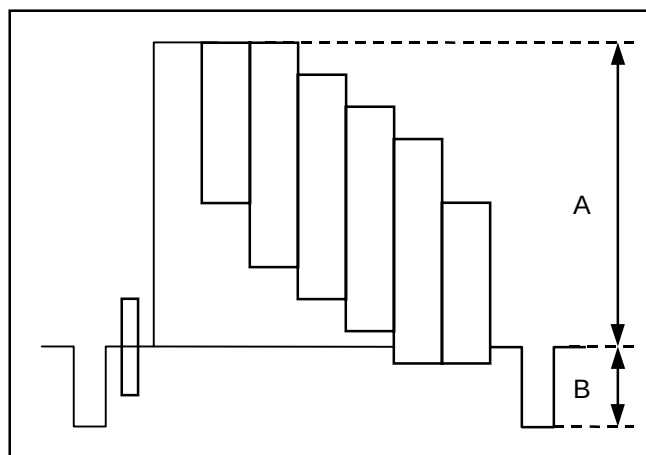
1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows :

PAGE : FUNCTION 3/5
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 86 ADR : 17

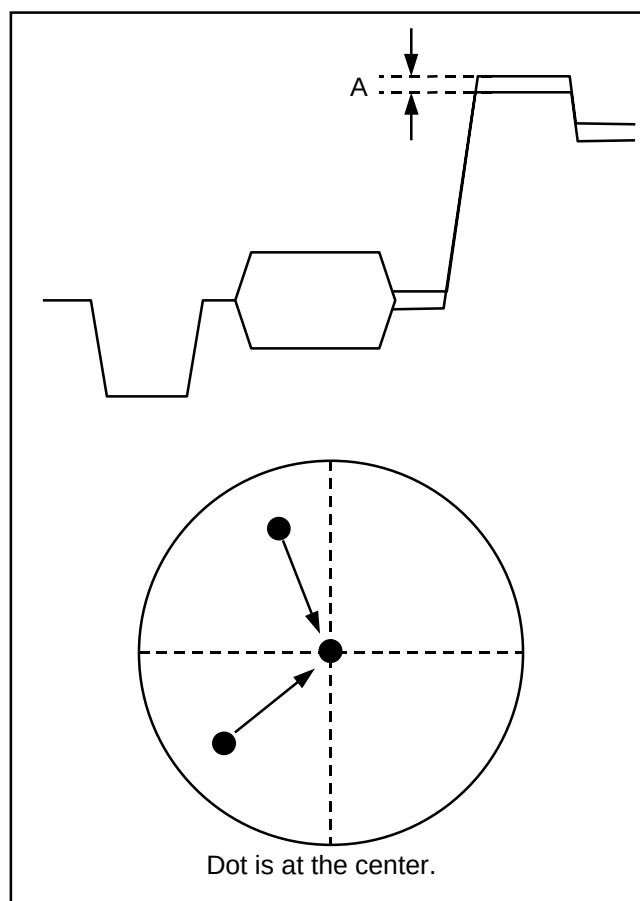
1. Press [→] or [←] key in EVR so that the **level A** is within specification.
2. Adjust the **VR602** so that the **level B** is within specification.



6-14. Carrier Balance Adjustment (for PAL only)

BOARD	Video I/F
SPEC.	A $\leq 10\text{mV}$
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR609 (PR), VR610 (PB)
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Waveform Monitor, Vector Scope

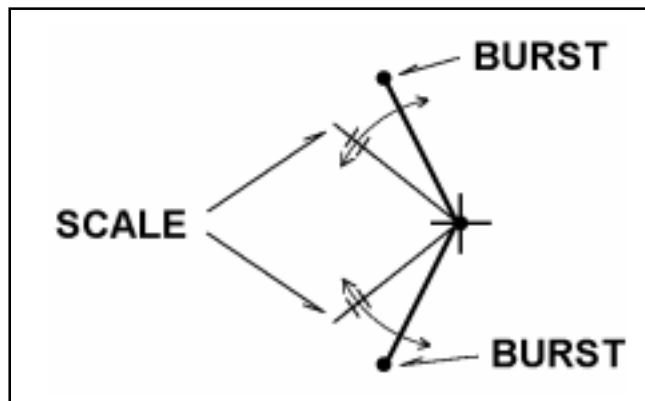
1. Adjust the **VR609** and **VR610** so that the dot is at the center of the vector scope.
2. Adjust the **VR609** so that the **width A** is minimized.
3. Adjust the **VR610** as well as **VR609**.
4. Repeat the above steps until the **width A** is within specification.



6-15. Burst Phase Adjustment (for PAL only)

BOARD	Video I/F
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR608
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Vector Scope

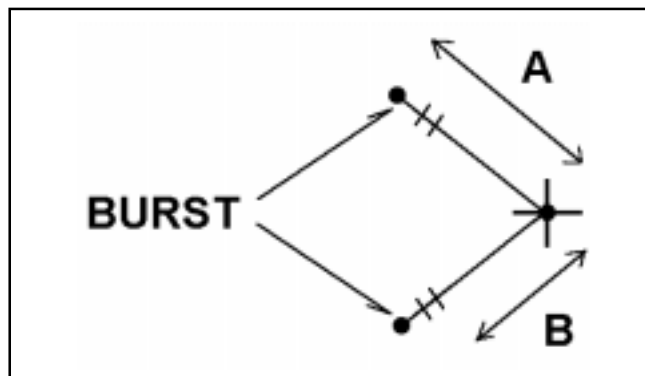
1. Adjust the **VR608** so that the **burst vectors** are fixed on the scale.



6-16. QUAD Adjustment (for PAL only)

BOARD	VIDEO I/F
TEST	VIDEO OUT (75 Ω terminated)
SPEC.	A = B
ADJUST	VC601
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Vector Scope

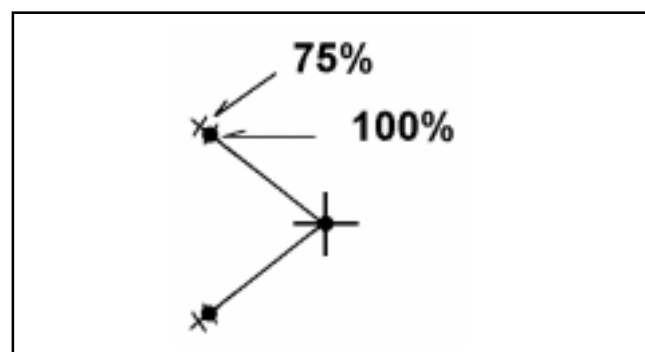
1. Adjust the **VC601** so that the **burst level A** and **B** are the same.



6-17. Burst Level Adjustment (for PAL only)

BOARD	Video I/F
SPEC.	100%
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR607
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Vector Scope

1. Adjust the **VR607** so that the **burst levels** are within specification.



6-18. Chroma Level Adjustment (for PAL only)

BOARD	Video I/F
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR604, EVR
MODE	PLAY
TAPE	VFM3680KM (0 ~ 10min)
M.EQ	Vector Scope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

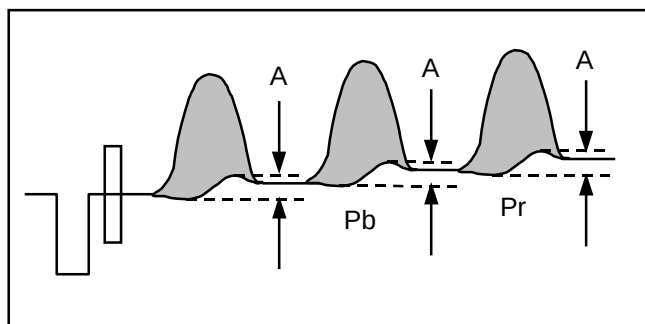
CMD : 02 DATA : 86 ADR : 16

1. Press [→] or [←] key in EVR so that the R dot is in the marker of the vector scope.
2. If necessary, fine-adjust the **VC601**.
3. Adjust the **VR604** so that each dot is in the marker of the vector scope.

6-19. Y/C Timing Adjustment (for PAL only)

BOARD	Video I/F
SPEC.	A = Minimum (Flat)
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR603 (PB), VR605 (PR)
MODE	PLAY
TAPE	VFM3680KM (26 ~ 30min)
M.EQ	Waveform Monitor

1. Adjust the **VR603** and **VR605** so that the portion A is flat.



6-20. Pb Timing Adjustment

BOARD	Video I/F
SPEC.	NTSC : A = $0 \pm 20\text{ns}$ (CAMERA) : A = $0 \pm 50\text{ns}$ (VIDEO) PAL : A = $0 \pm 20\text{ns}$
TEST	TP207(AD PB), TP208 (AD Y)
ADJUST	VR107(PB TMG)
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

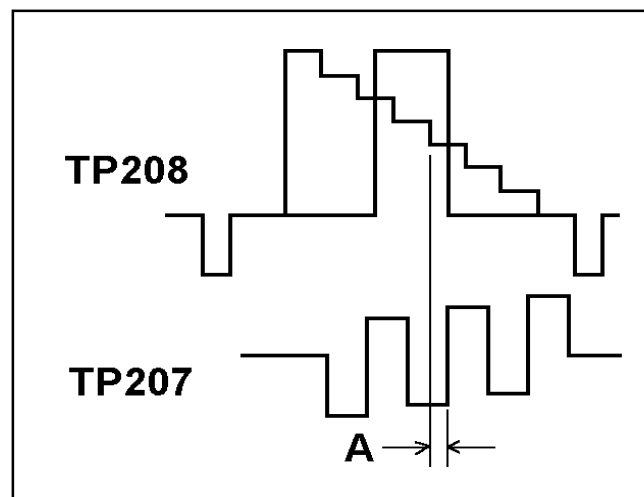
REC SIGNAL : **CAM → VIDEO**
(NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : OFF

1. Adjust the **VR107** so that the **phase difference A** between **TP207** and **TP208** is within specification.
2. (NTSC only) Select **VIDEO** in the menu of REC SIGNAL (FUNCTION 3/5).
3. (NTSC only) Confirm that the phase **difference A** is $0 \pm 50\text{ns}$.



6-21. Pr Timing Adjustment

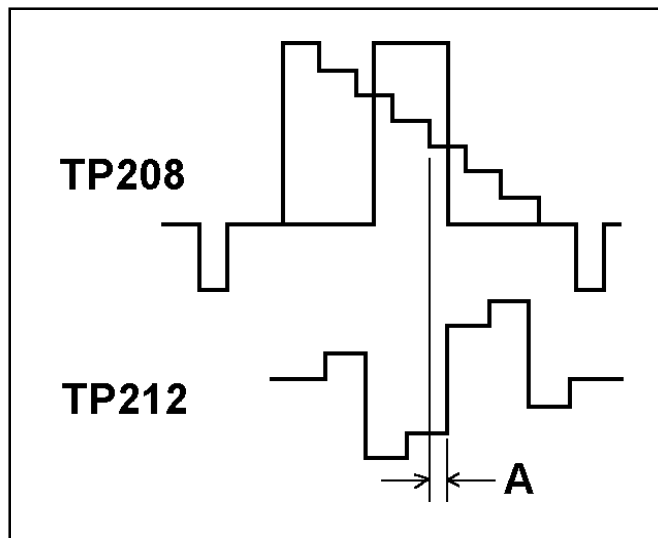
BOARD	Video I/F
SPEC.	NTSC : A = $0 \pm 20\text{ns}$ (CAMERA) : A = $0 \pm 50\text{ns}$ (VIDEO) PAL : A = $0 \pm 20\text{ns}$
TEST	TP208 (AD Y), TP212 (AD PR)
ADJUST	VR111 (PR TMG)
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 REC SIGNAL : **CAM** → **VIDEO**
 (NTSC only)
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

1. Adjust the **VR111** so that the **phase difference A** between **TP212** and **TP208** is within specification.
2. (NTSC only) Select **VIDEO** in the menu of REC SIGNAL (FUNCTION 3/5).
3. (NTSC only) Confirm that the **phase difference A** is $0 \pm 50\text{ns}$.



6-22. Y Clamp DC Adjustment

BOARD	Video I/F
TEST	TP301(Y PED)
ADJUST	EVR
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Oscilloscope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5
 REC SIGNAL : **CAM** (NTSC only)
 ECU CONNECT : EVR
 PAGE : SERVICE ADJ.
 IF ADJ. : OFF

EVR Setting

CMD : 02 DATA : 73 ADR : **11**

1. Monitor the **TP301** and press [→] or [←] key in EVR so that the level is about 5 VDC (flat).
2. If flat 5VDC does not appear, adjust high level of pulse to 5V.

6-23. Y Level Adjustment

BOARD	Video I/F
SPEC.	NTSC : A = $714 \pm 15\text{mV}$ PAL : A = $700 \pm 15\text{mV}$
TEST	VIDEO OUT (75 $\pm$ terminated)
ADJUST	VR104 (Y LEV)
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

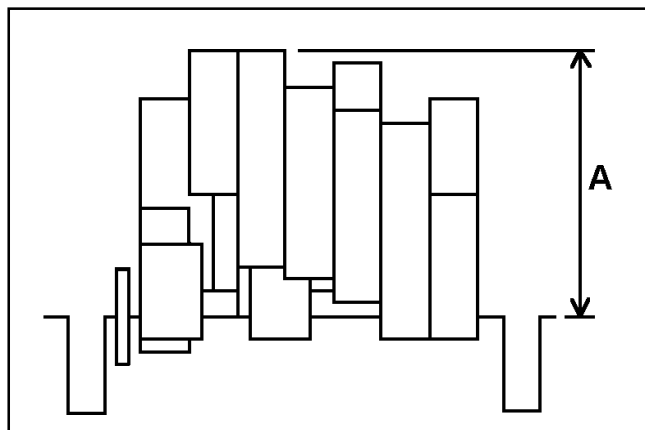
REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : ON

1. Monitor the VIDEO OUT and adjust the **VR104** so that the **level A** is within specification.



6-24. DEC Y Level Adjustment (for NTSC only)

BOARD	Video I/F
SPEC.	A = $714 \pm 15\text{mV}$
TEST	VIDEO OUT
ADJUST	VR2 (DEC Y LEV)
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Waveform Monitor

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

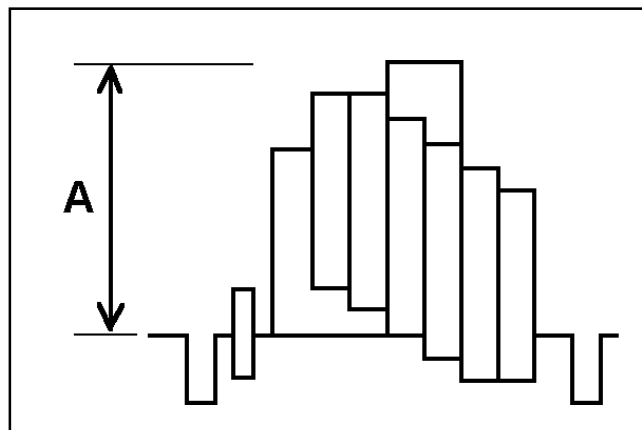
REC SIGNAL : **VIDEO**

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : ON

1. Monitor the VIDEO OUT and adjust the **VR2** so that the **level A** is within specification.



6-25. Camera Input Vector Adjustment

BOARD	Video I/F
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR108 (PB LEV), VR112 (PR LEV), EVR
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Vector Scope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

REC SIGNAL : **CAM** (NTSC only)

ECU CONNECT : EVR

PAGE : SERVICE ADJ.

IF ADJ. : ON

PAGE : LEVEL 3/6

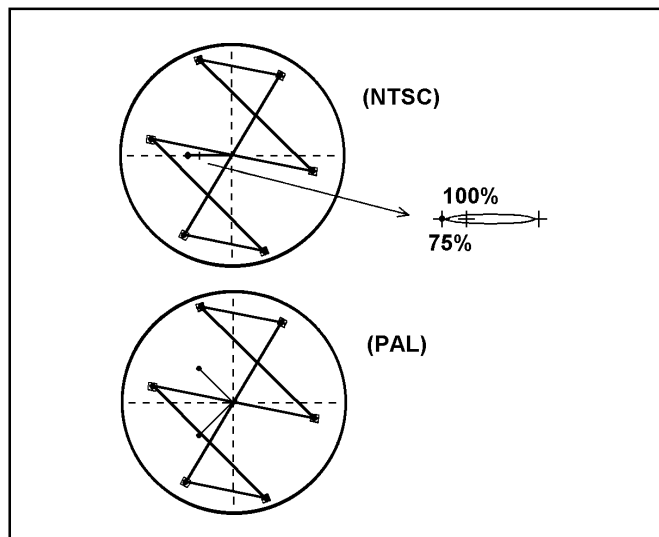
SET UP : **7.5%** (NTSC only)

EVR Setting

CMD : 02 DATA : 63 ADR : **12**

CMD : 02 DATA : 63 ADR : **13**

1. Adjust the **VR108** and **VR112** and press [→] or [←] key in EVR so that the vector center is at the center of the vector scope and each dot is in the marker of the vector scope.



<Note>

Do not use the extension board when execute this adjustment.

6-26. Video Input Vector Adjustment (NTSC only)

BOARD	Video I/F
TEST	VIDEO OUT (75 Ω terminated)
ADJUST	VR105 (PB LEV), VR109 (PR LEV), EVR
INPUT	CAMERA Color Bar
MODE	EE
M.EQ	Vector Scope

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : FUNCTION 3/5

REC SIGNAL : **VIDEO**

ECU CONNECT : EVR

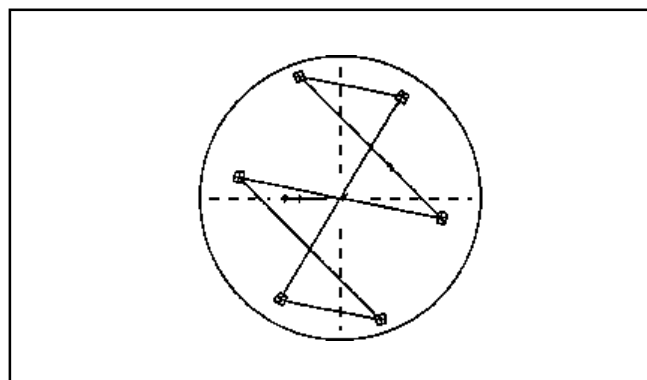
PAGE : SERVICE ADJ.

IF ADJ. : ON

EVR Setting

CMD : 02 DATA : D0 ADR : **19**

1. Adjust the **VR105** and **VR109** and press [→] or [←] key in EVR so that each dot is in the marker of the vector scope.



<Note>

This adjustment execute after completed the following item "6-19. Camera Input Vector Adjustment".

7. Servo

7-1. Reel Torque Offset Adjustment

BOARD	Servo
SPEC.	$20 \pm 2\text{mV}$
TEST	TP301 (S), TP302 (T), TG300 (GND)
ADJUST	VR501 (T), VR502 (S)
MODE	PLAY
M.EQ	Digital Volt Meter

1. Confirm the power off and make a short-circuit between **TP116** and **TP505**.
2. Turn the power ON and then set the tube* to cover the sensor LED and place the unit in no tape loading mode.
3. Hold the S-Reel by hand and press the PLAY key.
4. Adjust the **VR502** so that the **TP301 (S-Reel)** is within specification.
5. Hold the T-Reel by hand and press the PLAY key.
6. Adjust the **VR501** so that the **TP302 (T-Reel)** is within specification.
7. Make a open-circuit between **TP200** and **TP505**.

<Note>

1. Make a black tube* by yourself.

7-2. Tension Offset Current Adjustment

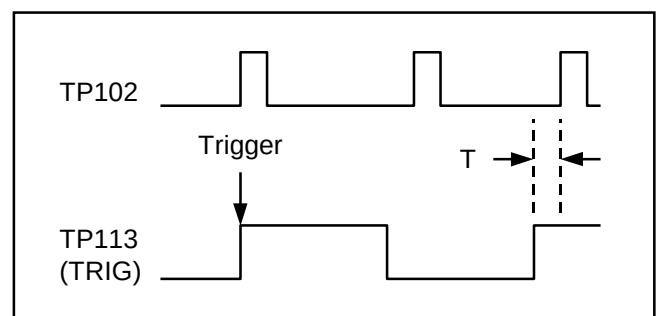
BOARD	Servo
SPEC.	$2.5 \pm 0.1\text{V}$
TEST	TP402
ADJUST	VR402
MODE	EJECT
M.EQ	Digital Volt Meter

1. Adjust the **VR402** so that the **TP402** voltage is within specification.

7-3. PG Shifter Adjustment

BOARD	Servo
SPEC.	$126.3 \pm 2.5\mu\text{s}$
TEST	TP113, TP102
ADJUST	VR101
MODE	PLAY
TAPE	Color Bar
M.EQ	Oscilloscope

1. Adjust the **VR101** so that the **T** is within specification. (Trigger : TP113)

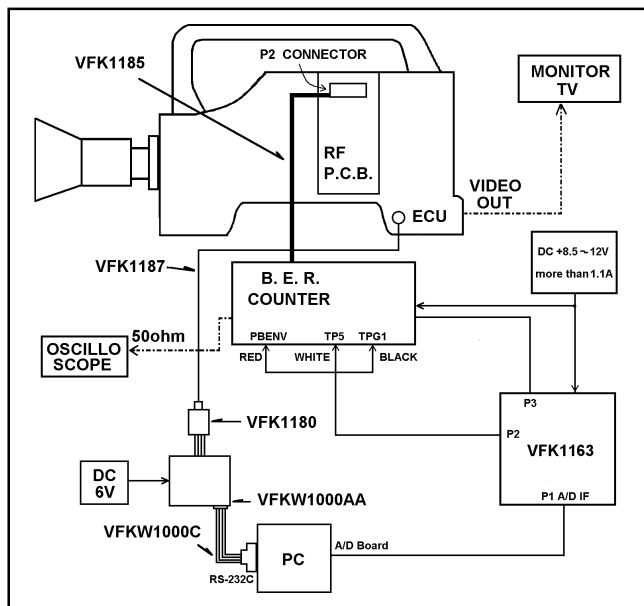


8. RF

8-1. System Hook Up and Setting

● System Hook Up

1. Connect the Camera with the Auto EQ/RF Adjustment System as shown below.
2. IC connection lip cable from the VFK1185 is not necessary (open).
3. Set the switches on the B. E. R. counter as follows.
 ERROR COUNT SW : ON
 CH SELECT SW : AUTO
 (L/R : Any one)



● Menu Setting on Camera Recorder

1. Open the operation panel.
2. Press [SHIFT], [→] and [←] buttons, and set the MENU switch to the SET position.
3. Set the switches on the B. E. R. counter as follows.
 PAGE : SERVICE ADJ.
 ECU CONNECT : EVR
 CONCEAL : OFF
 INNER ECC : OFF
 OUTER ECC : OFF
 SERVO MODE : ATF
4. After the above menu setting, close the menu mode.

● Auto Adjustment System Normalization (Calibration)

The system normalization (calibration) should be performed when using the adjustment system at the first time (after the completion of the system hook up) or changing the A/D board, PC or EQ tool. Also, we recommend to perform it regularly. The auto adjustment system normalization procedure, please refer to “8-10. Auto Adjustment System Normalization (Calibration) Procedure” .

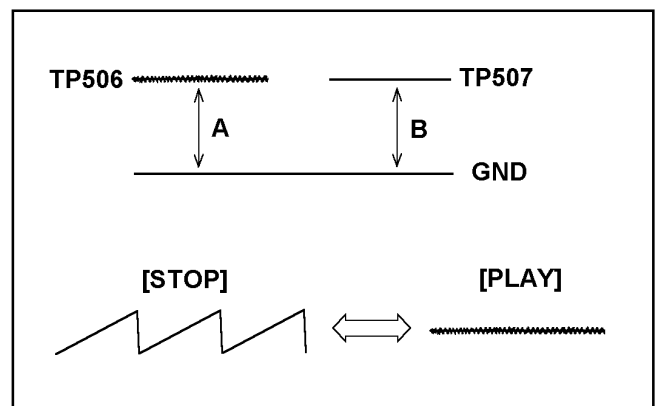
8-2. PLL VCO Adjustment

BOARD	RF
SPEC.	A = B = $2.0 \pm 0.1V$
TEST	TP506, TP507
ADJUST	EVR
MODE	PLAY
TAPE	CAMERA Colour Bar
M.EQ	Oscilloscope, EVR

EVR Setting

CMD : 02DATA : 7A ADR : 0B

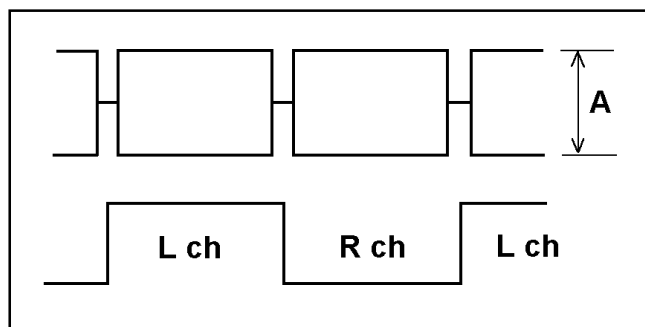
1. Monitor the TP506 and 507 in the DC mode.
2. Press the [→] or [←] button in EVR so that the levels A and B are the same.



8-3. R/P Envelope Level Confirmation

BOARD	RF
SPEC.	$A \geq 70\text{mV}$
TEST	R/P ENV, HSW (B.E.R. Counter) (50 Ω terminated)
MODE	PLAY
TAPE	CAMERA Colour Bar
M.EQ	Oscilloscope

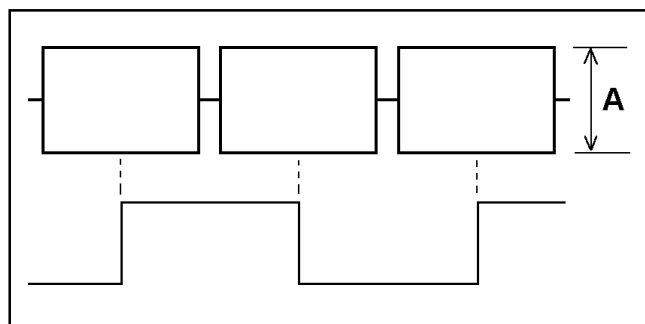
1. Confirm that the waveform is flat.



8-4. PB Envelope Level Adjustment

BOARD	RF
SPEC.	$100 \pm 10\text{mV}$
TEST	PB ENV, HSW (B.E.R. Counter) (50 Ω terminated)
ADJUST	VR400 (PB L), VR401 (PB R)
MODE	PLAY
TAPE	CAMERA Color Bar
M.EQ	Oscilloscope

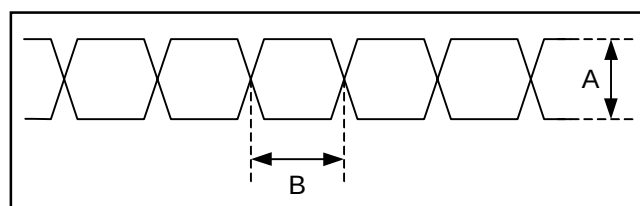
1. Confirm that the waveform is as shown in figure below.
2. Adjust the **VR400 (L ch)** and **VR401 (R ch)** so that the **level A** is within specification.



8-5. HSE Input Confirmation

BOARD	RF
SPEC.	$A = 1.3 \pm 0.1\text{V}$, $B = 24.0 \pm 1\text{ns}$
TEST	TP201, TP300 (Trigger)
ADJUST	VR200 (DUTY)
MODE	REC
TAPE	Blank Tape
M.EQ	Oscilloscope

1. Set the oscilloscope to AC mode.
2. Monitor the **TP201** and confirm that the **A** is within specification.
3. Confirm that the **B** is within specification.
4. If necessary, adjust the **VR200** slightly.



8-6. PB Equalizer Adjustment (Auto)

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [→] and [←] buttons, set MENU switch to SET position.
3. Set as follows:
 - PAGE : FUNCTION 3/5
 - ECU CONNECT : EVR
 - PAGE : SERVICE ADJ.
 - CONCEAL : OFF
 - INNER ECC : OFF
 - OUTER ECC : OFF
 - SERVO MODE : ATF
4. After the above setting, close the menu.

Auto Adjustment Software Boot Up

- Copy the all files contained in floppy disk (VFK1160B) to a directory of hard disc drive. (ex. "C:\DVCEQ")
- Execute DVCRF. EXE file on the DOS command prompt condition. (ex. "C:\DVCEQ\DVCRF")
- Select (2) AJ-D700 in DVCPRO MODEL SELECT.
- Select (1) NORMAL in PROGRAM SELECT.
- Wait about 20 seconds for parameter loading. To short cut this 20 seconds, confirm the power switch of the all equipment are turned ON and then press the "ENTRY" key.
- Personal Computer (PC) asks "Do you transfer BOOT PROGRAM?" then once turn the power switch of the EVR I/F box OFF and ON, and then select the [Y].
- PC asks whether any error has happened or not.
- MAIN MENU is available.
 - F1 MENU
 - PB Adjustment
 - REC Adjustment
 - Result
 - File
 - Restart
 - End
- Select 1. PB Adjustment.
- Select whether downloading data from VTR or not.
- Press F8 to select AUTO.
- Confirm that there is no tape in the VTR and press the [ENTER] key.
- PC asks "Initial Adjust?". Select the [Y].
- Select 1. All Adjust in PB Auto Menu.
- Insert an Alignment tape and play back colour bar portion according to the instruction on the display.
- During the auto adjustment don't touch the VTR, TOOL and PC.

Please note that the audio error rate is not displayed in the auto adjustment.

PlayBack Parameter

	RP Head		PB Head	
	Lch	Rch	Lch	Rch
RF Phase	0	0	0	0
RF Mag	0	0	0	0
PLL Phase	0		0	
PLL Slice	0		0	
Aeq	0		0	
EQ Gain	0	0	0	0
EQ Phase	0	0	0	0
UTB Phase1	0			
UTB Phase2	0			
UTB Phase3	0			
UTB Phs Fine	0			
Main Delay	0		0	
PLL UCD	0		0	
UTB Gain	0			

Error Rate Meter

Audio

L

R

Video

L

R

Command >

1MAIN 2 3 4 5 6 7ERRDSP 8AUTO 9 10

Error Rate Data

Node	Channel			
			VideoL	VideoR
PRO RP Master	****	****	A	B
PRO Self Play	****	****	****	****

Command >(SPACE):Next Page (ESC):Exit

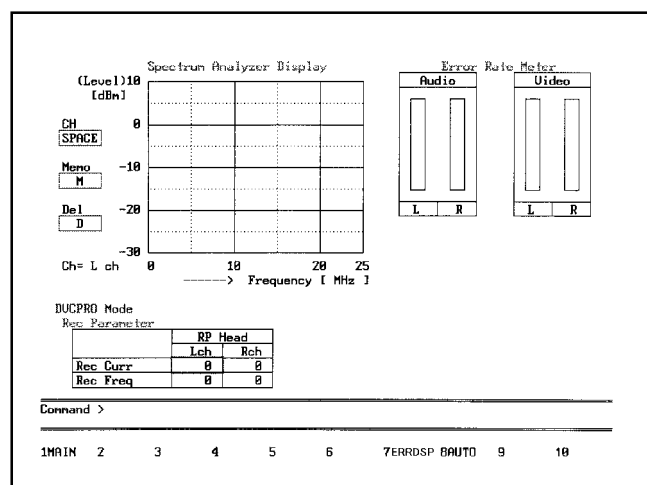
- Adjustment may complete after 5-6 minutes.
- Error rate is measured and displayed.
- Confirm that the data A and B are green colour.

If there is any red colour, try the same adjustment again after cleaning of the video head and tap transportation.

8-7. Rec. Curr. & Freq. Adj. (Auto)

BOARD	RF
TEST	PB ENV, HID R (50 Ω terminated)
ADJUST	VR400 (PB L), VR401 (PB R), EVR
MODE	PLAY, REC
TAPE	Blank Tape
M.EQ	Oscilloscope, Spectrum Analyzer

1. Open the MAIN MENU according to the same procedure as the PB Equalizer Adjustment.
2. Select 2. REC Adjustment in the MAIN MENU.
3. PC asks whether download the VT. Data from the VTR or not.
4. Select [Y] so that the VT. Adjustment data is saved in to the PC.
5. Press the F8 to select the AUTO.
6. Select 1. Adjust start in the sub menu.
7. Insert the alignment tape and playback the colour bar portion according to the instruction on the display.
8. After memorizing the playback data, insert a blank tape and start a recording according to the instruction on the display.
9. During the adjustment, don't touch the VT. and PC adjustment system.
10. During the adjustment, audio error rate in not displayed.



11. Rewind the recorded tape which was recorded on the blank tape and playback the recorded portion according to the instruction on the display.
12. The error rate is measured and displayed.
13. Confirm that the data A and B are green colour.

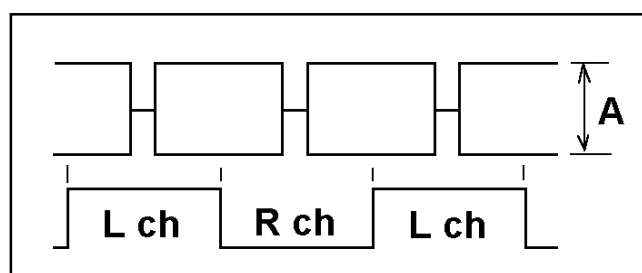
Error Rate Data				
Mode	Channel			
			VideoL	VideoR
PRO RP Master	****	****	****	****
PRO Self Play	****	****	A	B

Command > (SPACE):Next Page (ESC):Exit

8-8. Confidence PB Envelope Level Adjustment

BOARD	RF
SPEC.	A = 100 ± 10mV
TEST	PB ENV, HSW (B.E.R. Counter) (50 Ω terminated)
ADJUST	VR400 (PB L), VR401 (PB R)
INPUT	CAMERA Color Bar
MODE	REC
TAPE	Blank Tape
M.EQ	Oscilloscope

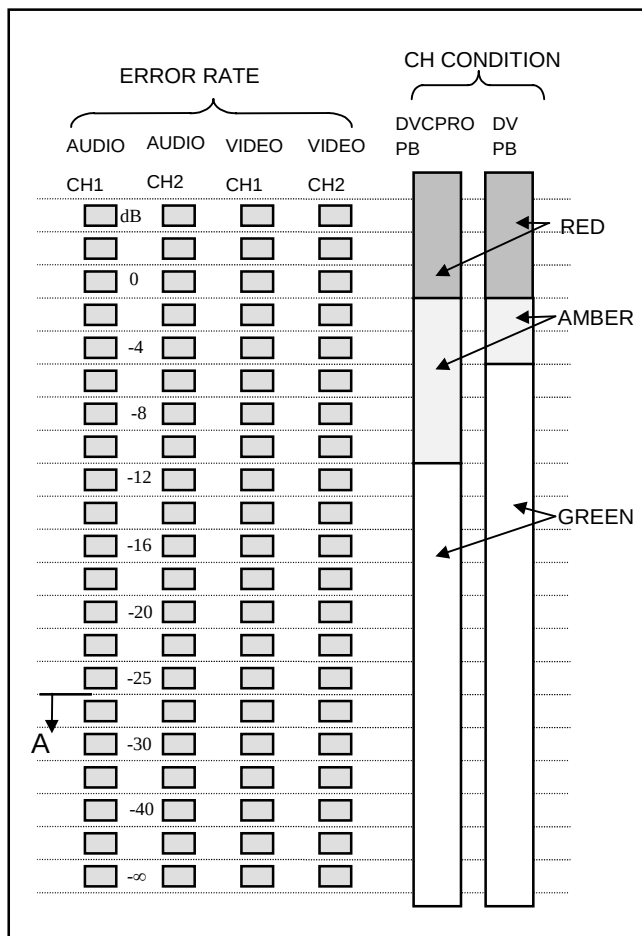
1. Place the unit in the confidence PB mode.
2. Adjust the **VR400** and **401** so that the **level A** is within specification.



8-9. Final Confirmation

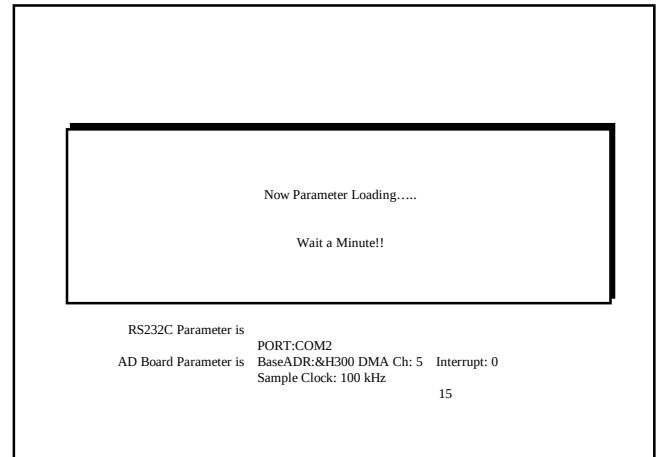
BOARD	RF
TEST	VIDEO OUT
INPUT	CAMERA Color Bar
MODE	REC, PLAY
M.EQ	B.E.R. Counter, Monitor TV

1. Record the internal colour bar signal.
2. Playback the recorded portion.
3. Confirm that the error rate is less than **250** on the L and R channels.
4. Playback the recorded portion on a studio editing DVCPRO and confirm that the error rate is less than A as shown in the figure below.
5. If it is not less than a, readjust Rec Current and Frequency Response.
6. Set the menu as follows:
PAGE : SERVICE ADJ.
 INNER ECC : ON
 OUTER ECC : ON
7. Confirm that there is no error in the playback picture.

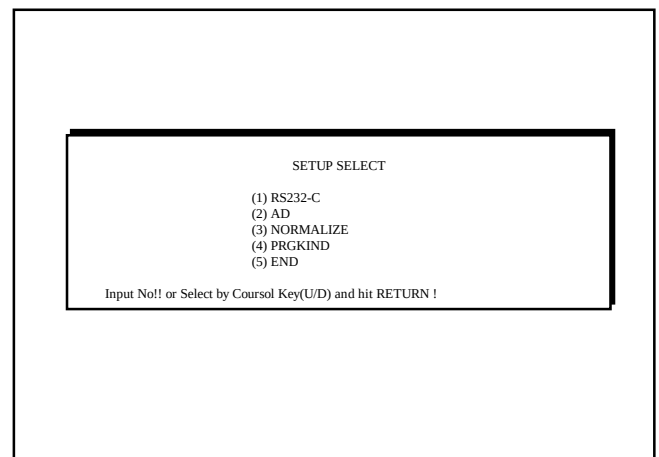


8-10. Auto Adjustment System Normalization (Calibration) Procedures

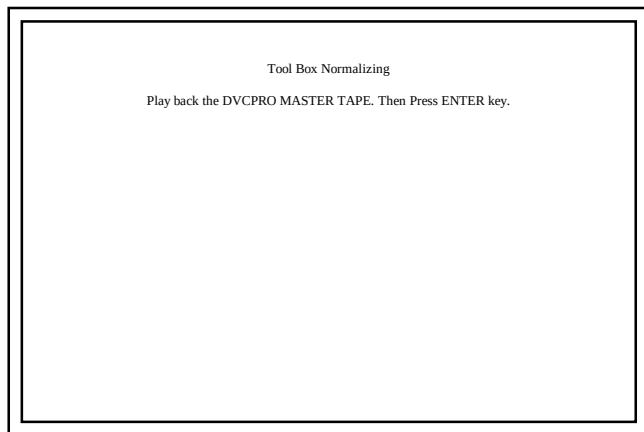
1. Boot up the auto adjustment system according paragraph **“8-6. PB Equalizer Adjustment (AUTO)”**.



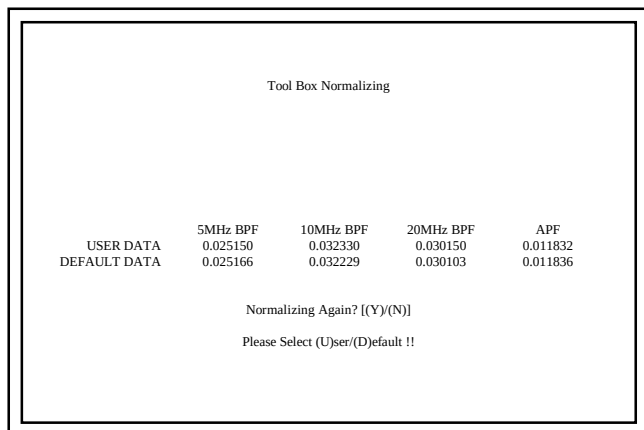
2. During the parameter count down, press the “F2” as shown in figure below.
3. Select “(3) NORMALIZE” when the display shows “SET UP SELECT” as shown the figure below.



- When display shows "TOOL BOX NORMALIZING", playback the colour bar portion of the alignment tape and press the ENTER key.



- Wait for the completion of USER DATA measurement. When measurement is completed, the display shows the USER DATA and DEFAULT DATA at the upper side of the display.
- Compare the USER DATA and DEFAULT DATA, and confirm that the difference is within ± 0.01 as shown in figure below.
- The PC asks "NORMALIZING AGAIN?".



- If value is within the specification, press the "N" key.
- The PC asks "PLEASE SELECT (U)ser/(D)efault".
- Press "U" to select the USER. This USER data becomes as the DEFAULT data from the next operation as shown in figure above.
- If the value is not within specification, confirm the connection of the adjustment system and quality of the alignment tape, and perform the above steps 7 and 8 again.
- ("NORMALIZING AGAIN?", press the "Y".)
- If it is not improved after several times may be something wrong with the EQ tool.
- When performing the Auto Adjustment System Normalization regularly under condition of the same combination of the PC, A/D Board and EQ Tool, the difference of USER DATA and DEFAULT DATA should be within ± 0.005

[Manual Adjustment]

Initial Setting (Manual)

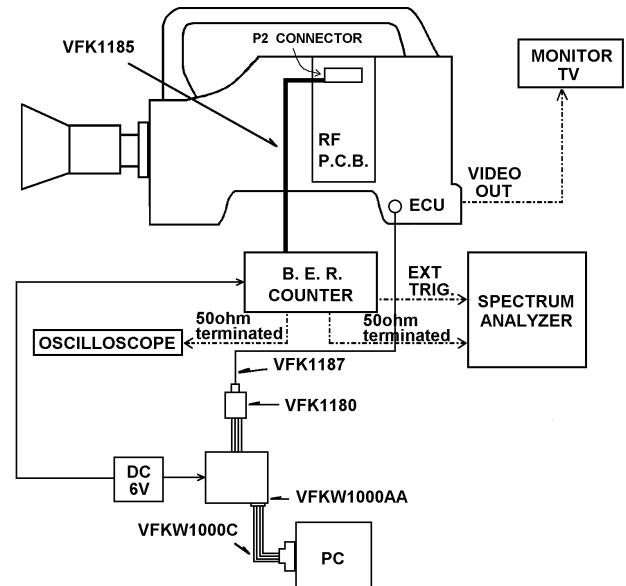
<Note>

Following procedures are required when using spectrum analyzer instead of RF Adjustment Tool.

- Connect the Camera Recorder, EVR and B.E.R. counter as shown in figure.

Menu Setting

- Open the operation panel.
- Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
- Set as follows:
PAGE : FUNCTION 3/5
ECU CONNECT : EVR
PAGE : SERVICE ADJ.
CONCEAL : OFF
- After setting turn the menu OFF.



PB Equalizer Adjustment 1 (Manual)

BOARD	RF
SPEC.	A = $20.93 \pm 0.1\text{MHz}$
TEST	EYE PAT, HSW (B.E.R. Counter)
ADJUST	EVR
MODE	PLAY
TAPE	Color Bar
M.EQ	Spectrum Analyzer, EVR

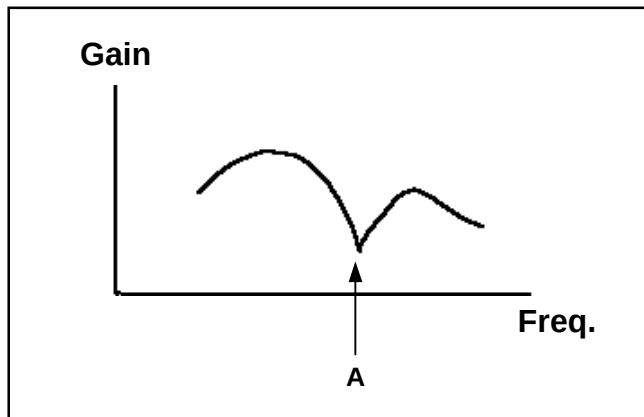
Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [→] and [←] buttons, set MENU switch to SET position.
3. Set as follows:
PAGE : FUNCTION 3/5
ECU CONNECT :EVR
PAGE : SERVICE ADJ.
CONCEAL :OFF
INNER ECC :OFF
OUTER ECC :OFF
4. After setting turn the menu OFF.

EVR Setting

CMD : 02 DATA : **C4** ADR : **0E**

1. Press the [→] or [←] key in EVR so that the **frequency at A portion** is within specification.



PB Equalizer Adjustment 2 (Manual)

BOARD	RF
TEST	VIDEO OUT, B.E.R. Counter
ADJUST	EVR
MODE	PLAY
TAPE	Color Bar
M.EQ	B.E.R. Counter, Monitor TV

EVR Setting

CMD : 02DATA : **90** ADR : **07** (EQ α L)
CMD : 02DATA : **90** ADR : **08** (EQ α R)
CMD : 02DATA : **35** ADR : **09** (EQ β L)
CMD : 02DATA : **35** ADR : **0A** (EQ β R)
CMD : 02DATA : **66** ADR : **0D** (PLL SL)
CMD : 02DATA : **9E** ADR : **0F** (PLL POS)
CMD : 02DATA : **CC** ADR : **10** (AUTO EQ)

1. Monitor the VIDEO OUT in monitor TV.
2. Set the ERROR COUNT ON in the B.E.R. counter.
3. Select **L ch** in the B.E.R. Counter.
4. Repeat adjusting the **EQ α L**, **EQ β L**, **PLL SL**, **PLL POS** and **AUTO EQ** until the error rate is minimized. (Start from the initial setting mentioned above and press [→] or [←] key in EVR to adjust.)
5. Select **R ch** in the B.E.R. Counter.
6. Fine-adjust the **EQ α R** and **EQ β R** until the error rate is minimized.

Rec. Curr. & Freq. (L ch) Adjustment (Manual)

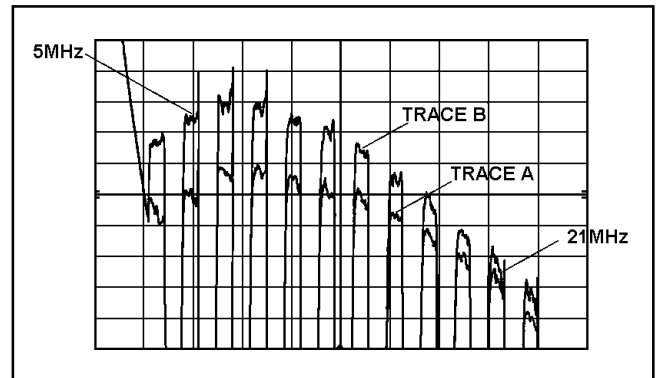
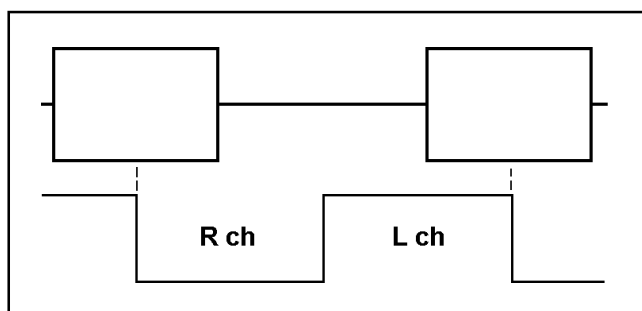
BOARD	RF
TEST	PB ENV, HSW (B.E.R. Counter)
ADJUST	VR401(PB R), EVR
INPUT	CAMERA Color Bar
MODE	PLAY, REC
TAPE	Color Bar, Blank Tape
M.EQ	Oscilloscope, Spectrum Analyzer, EVR

EVR Setting

CMD : 02 DATA : **80** ADR : **20** (REC CUR L)

CMD : 02 DATA : **FF** ADR : **1E** (REC FRE L)

1. Play back the color bar tape and monitor the HSW and PB ENV (50 Ω terminated).
2. Turn the **VR401** until the R ch level is minimized.
3. Input the PB ENV to the spectrum analyzer.
4. Store the average of 30 samples in TRACE B.
5. Eject the alignment tape and insert the blank tape.
6. Monitor the PB envelope in the spectrum analyzer without averaging.
7. Set the EVR to **REC CUR L** mode.
8. Press the [→] or [←] key in EVR so that the level of confidence PB at 5MHz is 4dB lower than that of TRACE B.
9. Set the EVR to **REC FRE L** mode.
10. Press the [←] key in EVR until the level at 21MHz is maximized first.
11. Set the EVR to **REC CUR L** mode.
12. Press the [→] or [←] so that the level at 5MHz is the same as TRACE B.
13. If the level of confidence PB at 21MHz is lower than TRACE B, adjust so that the spectrum of confidence PB is a similar figure to TRACE B in the range less than 20MHz.
14. If the level of confidence PB at 21MHz is higher than TRACE B, adjust so that the level of confidence PB around 5MHz is the same as TRACE B regardless of similarity.



Rec. Curr. & Freq. (R ch) Adjustment (Manual)

BOARD	RF
SPEC.	A = 100 ± 10mV
TEST	PB ENV, HSW (B.E.R. Counter)
ADJUST	VR400 (PB L), VR401 (PB R), EVR
INPUT	CAMERA Color Bar
MODE	PLAY, REC
TAPE	Color Bar, Blank Tape
M.EQ	Oscilloscope, Spectrum Analyzer, EVR

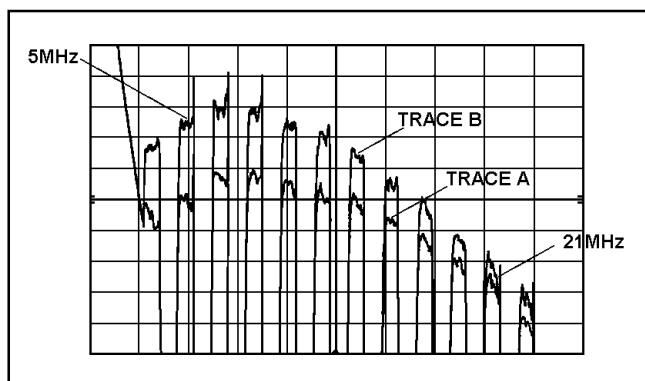
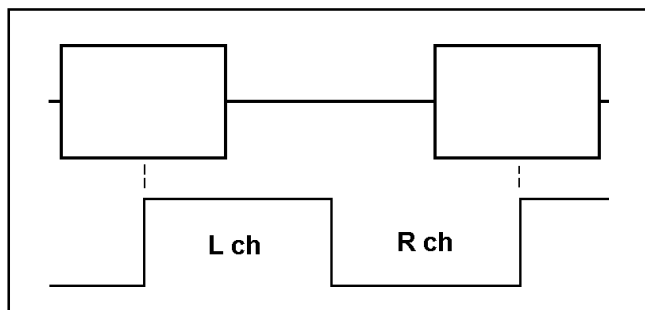
EVR Setting

CMD : 02 DATA : **80** ADR : **21** (REC CUR R)

CMD : 02 DATA : **FF** ADR : **1F** (REC FRE R)

1. Play back the color bar tape and monitor the HSW and PB ENV (50 Ω terminated).
2. Turn the **VR400** until the L ch level is minimized.
3. Adjust the **VR401** so that the R ch level is within specification.
4. Input the PB ENV to the spectrum analyzer.
5. Store the average of 30 samples in TRACE B.
6. Eject the alignment tape and insert the blank tape.
7. Monitor the confidence PB envelope in the spectrum analyzer without averaging.
8. Set the EVR to **REC CUR R** mode.
9. Press the [→] or [←] key in EVR so that the level of confidence PB at 5MHz is 4dB lower than that of TRACE B.
10. Set the EVR to **REC FRE R** mode.
11. Press the [←] key in EVR until the level at 21MHz is maximized first.
12. Set the EVR to **REC CUR R** mode.
13. Press the [→] or [←] so that the level at 5MHz is the same as TRACE B.

14. If the level of confidence PB at 21MHz is lower than TRACE B, adjust so that the spectrum of confidence PB is a similar figure to TRACE B in the range less than 20MHz.
15. If the level of confidence PB at 21MHz is higher than TRACE B, adjust so that the level of confidence B, adjust so that the level of confidence PB around 5MHz is the same as TRACE B regardless of similarity.



9. Audio LCD

9-1. Initial Setting

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [→] and [←] buttons, set MENU switch to SET position.
3. Set as follows:

PAGE : MAIN FUNCTION

PHANTOM FRONT : OFF

PHANTOM CH1 : OFF

PHANTOM CH2 : OFF

PAGE : FUNCTION 4/5

FRONT MIC : -60dB

REAR MIC CH1 : -60dB

REAR MIC CH2 : -60dB

LINE CH1/CH2 : (NTSC) +4dB

: (PAL) 0dB

STEREO/MONO : STEREO

MIC FILTER CH1 : OFF

MIC FILTER CH2 : OFF

EMPHASIS : OFF

PAGE : FUNCTION 5/5

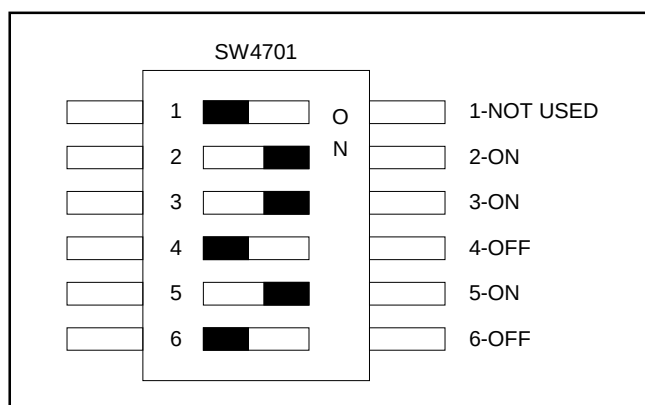
AUDIO OUT SEL : CH1

LIMITER : OFF

TEST SIGNAL : OFF

4. After setting turn the menu OFF.

1. Set the **SW4701** on Audio LCD board as shown in figure.



9-2. Playback Level Adjustment

BOARD	Audio LCD
SPEC.	(CH 1/CH 2) -20dBu ± 0.2dB (AUDIO OUT) (NTSC) 4dBu ± 0.2dB (PAL) 0dBu ± 0.2dB
TEST	Multi Connector CH1/CH2 (12P) AUDIO OUT (XLR-3P) (12P)
ADJUST	VR301 (CH1), VR401 (CH2), VR701
MODE	PLAY
TAPE	(NTSC) VFM3580KM (No.1:0 ~ 14min) (PAL) VFM3680KM (No.1:0 ~ 10min)
M.EQ	<1> Audio Precision, VFK1210 <2> VTVM, SHAN-C12TCA

SW Setting

AUDIO IN CH1 : REAR, LINE

AUDIO IN CH2 : REAR, LINE

AUDIO SELECT : MANUAL

<1. Using Audio Precision>

1. Connect multi connector with Audio Precision using VFK1210.
2. Adjust the **VR301 (CH 1)** so that the levels of **CH 1** (12pin multi connector) is within specification.
3. Adjust the **VR401 (CH 2)** so that the levels of **CH 2** (12pin multi connector) is within specification.
4. Adjust the **VR701** so that the level of **AUDIO OUT** (XLR at Rear Jack) is within specification.

<2. Using VTVM>

1. When using VTVM, connect multi connector with VTVM with SHAN-C12TCA.
(Red : CH1, Black : CH2)
2. Follow the same procedure as **<1. Using Audio Precision>**.

9-3. Recording Level Adjustment

BOARD	Audio LCD
SPEC.	-20dBu $\pm$ 0.2dB
TEST	Multi Connector (CH1, CH2)
ADJUST	VR102, VR202
INPUT	NTSC : 1kHz 4dBu Sine Wave PAL : 1kHz 0dBu Sine Wave
MODE	STOP
M.EQ	<1> Audio Precision, VFK1210 <2> VTVM, SHAN-C12TCA, CR Oscillator

SW Setting

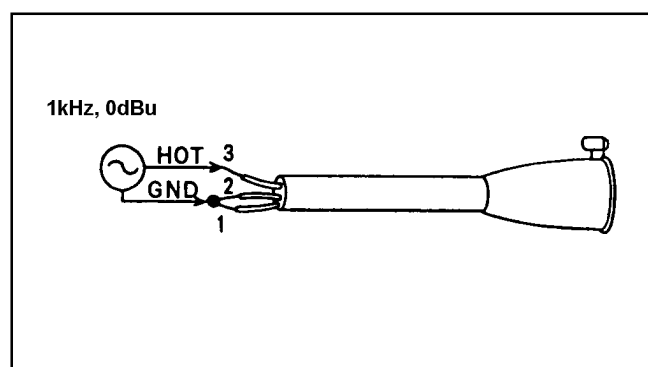
AUDIO IN CH1 : REAR, LINE
AUDIO IN CH2 : REAR, LINE
AUDIO SELECT : MANUAL

<1. Using Audio Precision>

1. Connect multi connector with Audio Precision using VFK1210.
2. Set the AUDIO LEVEL VRs to center position.
3. Input the signal mentioned above to AUDIO IN CH1 connector.
4. Adjust the **VR102** so that the level of **CH 1 OUT** (multi connector) is within specification.
5. Input the signal mentioned above to AUDIO IN CH2 connector.
6. Adjust the **VR202** so that the level of **CH 2 OUT** (multi connector) is within specification.

<2. Using VTVM>

1. When using VTVM, connect multi connector with VTVM with SHAN-C12TCA.
(Red : CH1, Black : CH2)
2. Follow the same procedure as **<1. Using Audio Precision>**.
3. Use the cable shown below to input signal.



9-4. Meter Adjustment

BOARD	Audio LCD
SPEC.	NTSC : 0.63 $\pm$ 0.005V PAL : 0.71 $\pm$ 0.005V
TEST	TP102, TP202
ADJUST	VR103, VR203
INPUT	NTSC : 1kHz 4dBu Sine Wave PAL : 1kHz 0dBu Sine Wave
MODE	STOP
M.EQ	<1> Digital Volt Meter, Audio Precision <2> Digital Volt Meter, CR oscillator

SW Setting

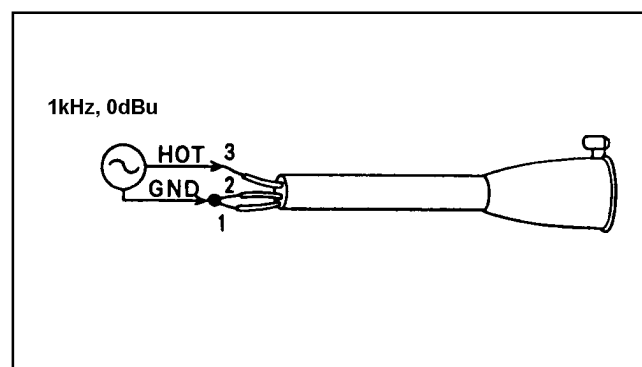
AUDIO IN CH1 : REAR, LINE
AUDIO IN CH2 : REAR, LINE
AUDIO SELECT : MANUAL

<1. Using Audio Precision>

1. Input the signal mentioned above to AUDIO IN CH1 connector.
2. Adjust the **VR103** so that the DC voltage at the **TP102** is within specification.
3. Input the signal mentioned above to AUDIO IN CH2 connector.
4. Adjust the **VR203** so that the DC voltage at the **TP202** is within specification.
5. Confirm that the Audio Level Meter on LCD indicates one scale higher than **-20dB**.

<2. Using CR Oscillator>

1. Follow the same procedure as **<1. Using Audio Precision>**.



9-5. Test SG Adjustment

BOARD	Audio LCD
SPEC.	Distortion : $1.0 \pm 0.1\%$ Level : $-20\text{dBu} \pm 0.5\text{dB}$
TEST	Multi Connector (CH 1) (12P)
ADJUST	VR1, VR2
MODE	STOP
M.EQ	Frequency Counter <1> Audio Precision, VFK1210 <2> VTVM, SHAN-C12TCA, Distortion Meter

SW Setting

AUDIO IN CH1 : FRONT, MIC
AUDIO IN CH2 : REAR, LINE
AUDIO SELECT : MANUAL

Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT] and [+] buttons, set MENU switch to SET position.
3. Set as follows:
PAGE : FUNCTION 5/5
TEST TONE : ON
4. After setting turn the menu OFF.

<1. Using Audio Precision>

1. Confirm that no signal is input.
2. Select **BARS** in OUTPUT SW and **FRONT MIC** in AUDIO IN SW CH1.
3. Confirm that 1kHz test signal is output.
4. Adjust the **VR1** so that the distortion is within specification.
5. Adjust the **VR2** so that the level is within specification.
6. After the adjustment, return TEST TONE to OFF.

<2. Using VTVM>

1. Follow the same procedure as <1. Using Audio Precision>.

9-6. CUE Recording Level Adjustment

BOARD	Audio LCD
SPEC.	$-10\text{dBu} \pm 0.2\text{dB}$
TEST	TP501
ADJUST	VR501, SW701-2pin
INPUT	NTSC : 1kHz 4dBu Sine Wave PAL : 1kHz 0dBu Sine Wave
MODE	STOP
M.EQ	<1> Oscilloscope, Audio Precision <2> Oscilloscope, CR oscillator

SW Setting

AUDIO IN CH1 : REAR, LINE
AUDIO IN CH2 : REAR, LINE
AUDIO SELECT : MANUAL

<1. Using Audio Precision>

1. Input the signal mentioned above to AUDIO IN CH1 connector.
2. Set the 2nd pin of **SW701** to OFF and adjust the **VR501** so that the level is within specification.
3. After the adjustment, return the 2nd pin of **SW701** to ON.

<2. Using CR Oscillator>

1. Follow the same procedure as <1. Using Audio Precision>.

9-7. CUE Recording Current Adjustment

BOARD	Audio LCD
SPEC.	0 ± 0.5V
TEST	TP505
ADJUST	VR1002 (Rear Jack Board), VR503
INPUT	1kHz 0dBu Sine Wave
MODE	PLAY, REC
TAPE	NTSC : VFM3580KM (No.1:0 ~ 14min) PAL : VFM3680KM (No.1:0 ~ 10min) Blank Tape
M.EQ	<1> Oscilloscope, Audio Precision <2> Oscilloscope, CR oscillator

SW Setting

AUDIO IN CH1 : REAR, LINE

AUDIO IN CH2 : REAR, LINE

AUDIO SELECT : MANUAL

<1. Using Audio Precision>

1. Confirm that the 2nd pin of **SW701** to OFF and input the signal mentioned above to AUDIO IN CH1 connector.
2. Playback the alignment tape and adjust the **VR503** so that the level at the **TP505** is **-12.0dBu ± 0.5dB**.
3. Record the signal.
4. Play back the recorded signal and adjust the **VR1002** on the Rear Jack Board so that the level difference from the level adjusted above is within specification. (**VR1002** is mounted on bottom side, below the flat cable connecting Audio LCD Board with Rear Jack Board.)
5. After the adjustment, return the 2nd pin of **SW701** to ON.

<2. Using CR Oscillator>

1. Follow the same procedure as **<1. Using Audio Precision>**.

9-8. Final Setting

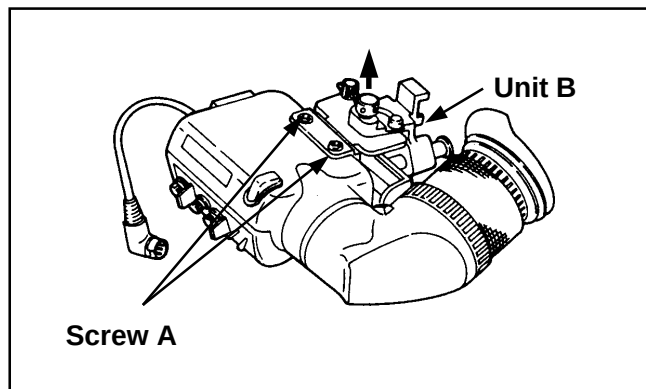
Menu Setting

1. Open the operation panel.
2. Pressing [SHIFT], [+] and [-] buttons, set MENU switch to SET position.
3. Set as follows:
PAGE : MAIN FUNCTION
PHANTOM FRONT : **ON**
PHANTOM CH1 : OFF
PHANTOM CH2 : OFF
PAGE : FUNCTION 4/5
FRONT MIC : **-40dB**
REAR MIC CH1 : -60dB
REAR MIC CH2 : -60dB
LINE CH1/CH2 : (NTSC) +4dB
: (PAL) 0dB
STEREO/MONO : STEREO
MIC FILTER CH1 : OFF
MIC FILTER CH2 : OFF
EMPHASIS : OFF
PAGE : FUNCTION 5/5
AUDIO OUT SEL : CH1
LIMITER : **ON**
TEST SIGNAL : **ON**
4. After setting turn the menu OFF.

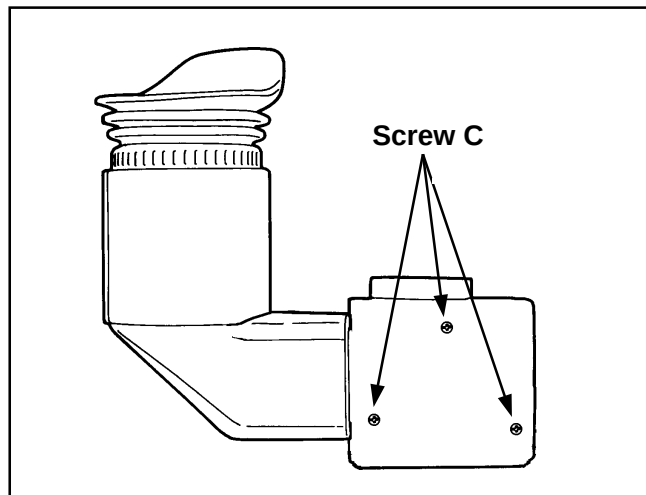
10. EVF

Preparation

1. Remove two **screws A** to pull off the unit B.



2. Remove three **screws C** at bottom side.
3. Open bottom case.
4. Connect EVF cable with AJ-D700.



10-1. H Free Run Adjustment

BOARD	VIDEO
SPEC.	15.75 $\pm$ 0.1kHz (NTSC) 15.625 $\pm$ 0.1kHz (PAL)
TEST	TP9102 (H Def Board)
ADJUST	VR9001
M.EQ	Frequency Counter

1. Adjust the **VR9001** so that the frequency at the **TP9102** is within specification without input signal.

10-2. V Free Run Adjustment

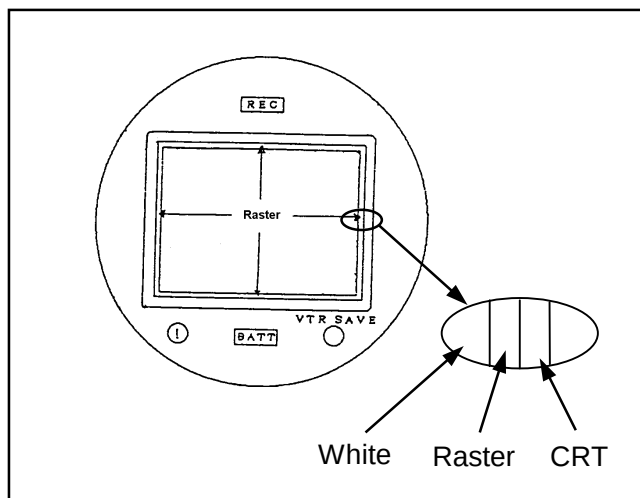
BOARD	VIDEO
SPEC.	54 $\pm$ 0.5Hz (NTSC) 46 $\pm$ 0.5Hz (PAL)
TEST	TP9002
ADJUST	VR9002
M.EQ	Frequency Counter

1. Adjust the **VR9002** so that the frequency at the **TP9002** is within specification without input signal.

10-3. Sub Bright Adjustment

BOARD	H Def
TEST	EVF Picture
ADJUST	VR9103
SUBJECT	90% White

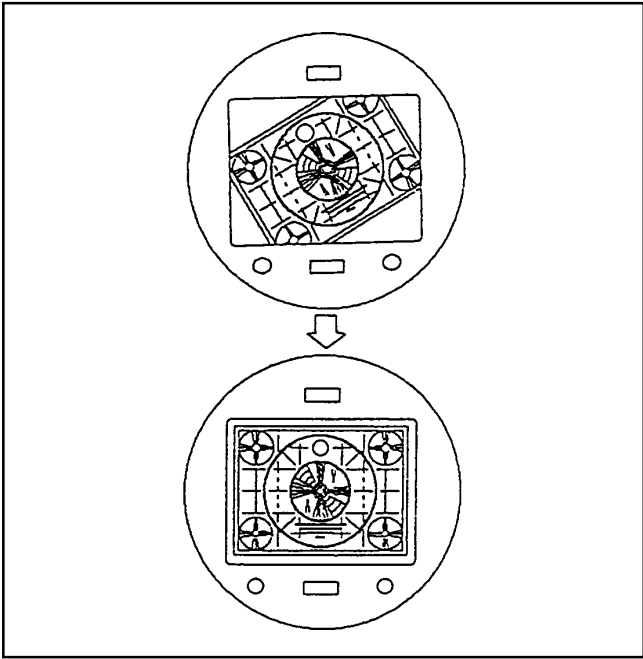
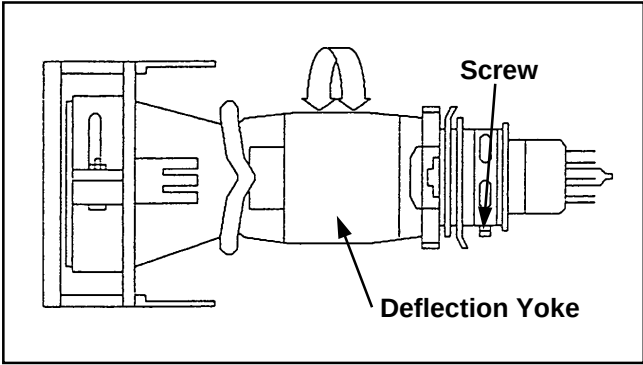
1. Set BRIGHT VR to MAX, CONTRAST VR to MAX and PEAKING VR to MIN.
2. Adjust the **VR9103** so that raster slightly appears.



10-4. Rotation Adjustment

TEST	EVF Picture
ADJUST	Deflection Yoke
SUBJECT	Registration Chart

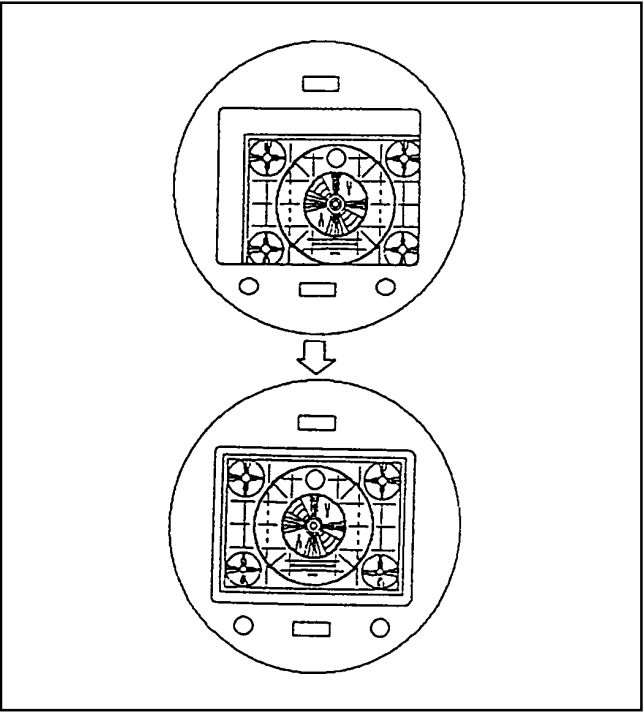
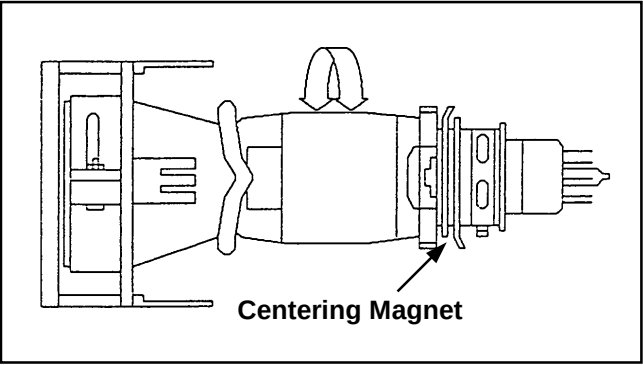
- 1. Loosen the screw and rotate Deflection Yoke so that the picture stands horizontally.
- 2. Tighten the screw again.



10-5. Centering Adjustment

BOARD	H Def
TEST	EVF Picture
ADJUST	Centering Magnet
SUBJECT	Registration Chart

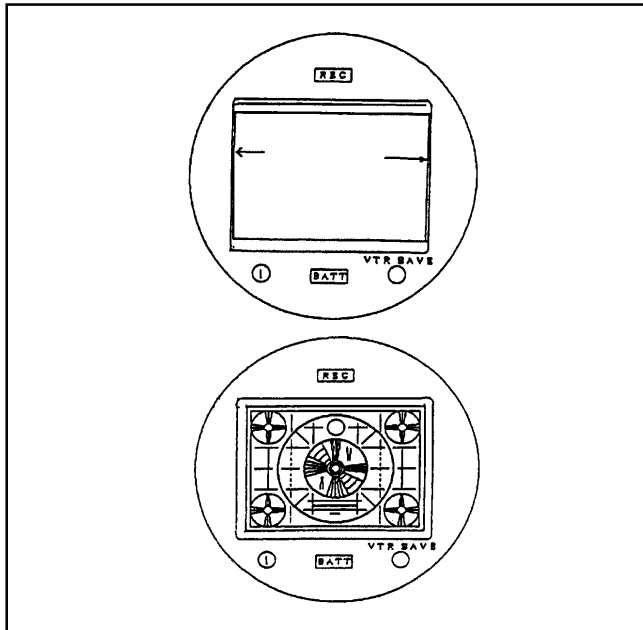
- 1. Set BRIGHT VR to MAX, CONTRAST VR to MAX and PEAKING VR to MIN.
- 2. Rotate Centering Magnet so that the picture stands at the center.



10-6. Size Adjustment

BOARD	H Def, VIDEO
TEST	EVF Picture
ADJUST	VR9101(H DEF), VR9003(VIDEO)
SUBJECT	Registration Chart

1. Set BRIGHT VR to MAX, CONTRAST VR to MAX and PEAKING VR to MIN.
2. Adjust the **VR9101** so that the picture is maximized.
3. Repeat Rotation and Centering adjustments slightly in case of need.
4. Adjust the **VR9003** so that the circle of chart is most round.



10-7. V Linearity Adjustment

BOARD	VIDEO
TEST	EVF Picture
ADJUST	VR9004
SUBJECT	Registration Chart

1. Adjust the **VR9004** so that the circle of chart is most round.

10-8. Balance Adjustment

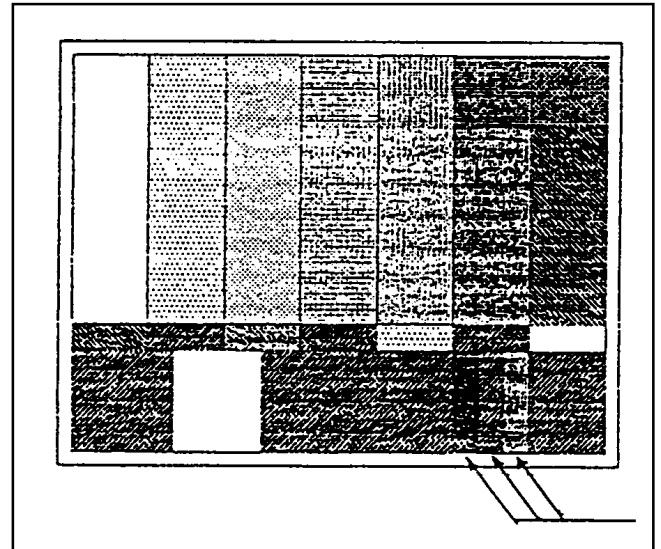
TEST	EVF Picture
ADJUST	Deflection Yoke Centering Magnet VR9003, VR9004
SUBJECT	Registration Chart

1. Fine-adjust Rotation, Centering, Size (Vertical) and V Linearity.

10-9. Bright Adjustment

BOARD	VR.SW
TEST	EVF Picture
ADJUST	VR9301
SUBJECT	Color Bar (SMPTE)

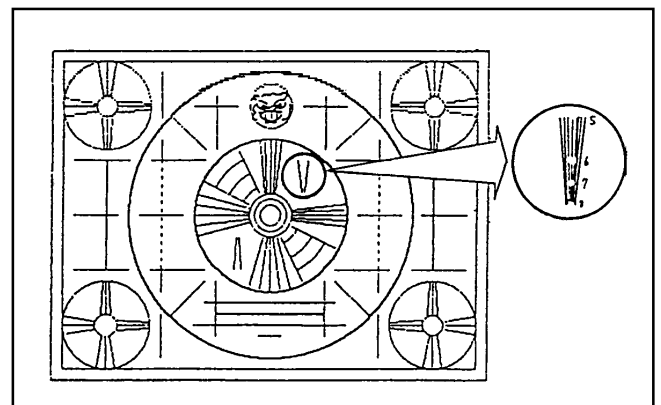
1. Set CONTRAST VR to MAX and PEAKING VR to MIN.
2. Monitor the three regions indicated by arrow.
3. Adjust the **VR9301** so that the right region is slightly lighted and other two is black.



10-10. Focus Adjustment

BOARD	H DEF
TEST	EVF Picture
ADJUST	VR9102
SUBJECT	Registration Chart

1. Set CONTRAST VR to MAX and PEAKING VR to MIN.
2. Adjust the **VR9102** so that resolution is best.



11. Power

11-1. D3.0V Adjustment

BOARD	Power, VIDEO MAIN
SPEC.	3.15V+0.05V/-0.00V
TEST	TP9[3.15],TP6[A-GND] (VIDEO MAIN Board)
ADJUST	VR1005(POWER Board)
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP9**, and its ground to **TP6** on the VIDEO MAIN Board, then adjust **VR1005** (POWER Board) so that the voltage is in the specification.

11-2. D5.0V Adjustment

BOARD	Power
SPEC.	5.00V+/-0.10V
TEST	TP1010,TG1002[GND]
ADJUST	VR1006
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1010**, and its ground to **TG1002** on the POWER Board, then adjust **VR1006** (POWER Board) so that the voltage is in the specification.

11-3. A5.6V Adjustment

BOARD	Power
SPEC.	5.60V+/-0.10V
TEST	TP1008,TG1002[GND]
ADJUST	VR1004
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1008**, and its ground to **TG1002** on the POWER Board, then adjust **VR1004** (POWER Board) so that the voltage is in the specification.

11-4. A9.0V Adjustment

BOARD	Power
SPEC.	9.00V+/-0.10V
TEST	TP1007,TG1002[GND]
ADJUST	VR1003
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1007**, and its ground to **TG1002** on the POWER Board, then adjust **VR1003** (POWER Board) so that the voltage is in the specification.

11-5. A-5.6V Adjustment

BOARD	Power
SPEC.	-5.60V+/-0.10V
TEST	TP1003,TG1002[GND]
ADJUST	VR1001
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1003**, and its ground to **TG1002** on the POWER Board, then adjust **VR1001** (POWER Board) so that the voltage is in the specification.

11-6. A3.6V Adjustment

BOARD	Power
SPEC.	3.60V+/-0.10V
TEST	TP1011,TG1002[GND]
ADJUST	VR1002
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1011**, and its ground to **TG1002** on the POWER Board, then adjust **VR1002** (POWER Board) so that the voltage is in the specification.

11-7. CCD17.0V Confirmation

<MEMO>

BOARD	Power
SPEC.	17.40V+/-0.40V
TEST	TP1005,TG1002[GND]
ADJUST	-----
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1005**, and its ground to **TG1002** on the POWER Board, then confirm that the voltage is in the specification.
2. If it is not in the specification, adjust **VR1002** (11-6 A3.6V Adjustment) so that the voltage is in the specification.

11-8. CCD-11.0V Confirmation

BOARD	Power
SPEC.	-11.50V+/-0.40V
TEST	TP1006,TG1002[GND]
ADJUST	-----
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1006**, and its ground to **TG1002** on the POWER Board, then confirm that the voltage is in the specification.
2. If it is not in the specification, adjust **VR1002** (11-6 A3.6V Adjustment) so that the voltage is in the specification.

11-9. A-3.9V Confirmation

BOARD	Power
SPEC.	-3.90V+/-0.30V
TEST	TP1012,TG1002[GND]
ADJUST	-----
INPUT	CAMERA Colour Bar
MODE	REC
M.EQ	Digital Volt Meter

1. Connect a D.V.M. to **TP1012**, and its ground to **TG1002** on the POWER Board, then confirm that the voltage is in the specification.
2. If it is not in the specification, adjust **VR1002** (11-6 A3.6V Adjustment) so that the voltage is in the specification.